

DULUTH INTERNATIONAL AIRPORT

Director of Airports: Brian Ryks 4701 GRINDEN DRIVE - DULUTH INTERNATIONAL AIRPORT **DULUTH, MINNESOTA 55811**

FAA AIP No. - 3-27-0024-48-10 RS&H PROJ. No. - 213.1882.091 CITY OF DULUTH BID No. - 10-4401

DULUTH AIRPORT AUTHORITY BOARD OF DIRECTORS

President: John Eagleton

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NEW PASSENGER TERMINAL BID PACKAGE 1 - Sitework, Structure, Enclosure VOLUME 2 OF 2 ARCHITECTURAL, STRUCTURAL, MECHANICAL ELECTRICAL, PLUMBING **CONFORMANCE SET JULY 12, 2010**



Construction Managers: KRAUS-ANDERSON.

3716 Oneota Street Duluth MN 55807 TEL: (218) 722-3775 / FAX: (218) 722-3778



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4525 Airport Approach Road, Duluth MN 55811 TEL: (218) 722-1227 / FAX: (218) 722-1052

Interior Architects:

SJA ARCHITECTS 11 E Superior Street Suite 340,

Duluth MN 55802 TEL: (218) 724-8578 / FAX: (218) 724-8717

Structural Engineers:

MBJ CONSULTING ENG.

501 Lake Avenue South, Suite 300, Duluth MN 55802 TEL: (218) 722-1056 / FAX: (218) 722-9306

M/E/P/FP Engineers: COSENTINI ASSOCIATES INC.

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Baggage Handling Systems Consultants: BNP ASSOCIATES INC.

101 East Ridge Office Park, Suite 103, Danbury CT 06810 TEL: (203) 792-3000 / FAX: (203) 792-4900

Landscaping Consultants:

APPOLD DESIGN

2432 East First Street. Duluth MN 55812 TEL: (218) 591-5079

DRAWING LIST

S106 CANOPY FOUNDATION PLAN — AREA A S107 CANOPY FOUNDATION PLAN — AREA B S108 CANOPY ROOF FRAMING PLAN — AREA A

S109 CANOPY ROOF FRAMING PLAN - AREA B

S112 SECOND LEVEL FRAMING PLAN - AREA A

S113 SECOND LEVEL FRAMING PLAN — AREA B S114 THIRD LEVEL FRAMING PLAN — AREA A

S115 THIRD LEVEL FRAMING PLAN — AREA B S116 ROOF LEVEL FRAMING PLAN — AREA A

S117 ROOF LEVEL FRAMING PLAN - AREA B

S110 FOUNDATION PLAN — AREA A

S111 FOUNDATION PLAN - AREA B

S118 TUG ROAD FOUNDATION PLAN

S119 TUG ROAD ROOF FRAMING PLAN

S301 BRACING ELEVATIONS AND DETAILS S302 BRACING ELEVATIONS AND DETAILS

S401 COLUMN SCHEDULE AND DETAILS

S501 STRUCTURAL DETAILS S502 STRUCTURAL DETAILS S503 STRUCTURAL DETAILS S504 STRUCTURAL DETAILS S505 STRUCTURAL DETAILS

S701 STRUCTURAL DETAILS S702 STRUCTURAL DETAILS S703 STRUCTURAL DETAILS S704 STRUCTURAL DETAILS S705 STRUCTURAL DETAILS S706 STRUCTURAL DETAILS

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G000 COVER SHEET
G101 DRAWING LIST & PROJECT DATA
                                                           MECHANICAL
<u>ARCHITECTURAL</u>
                                                           MOO1 MECHANICAL LEGEND
                                                           M002 MECHANICAL SYMBOLS
A001 ARCHITECTUAL ABBREIVATIONS AND GENERAL NOTES
A002 SYMBOLS AND ADA
                                                           M108 ENLARGED UNDERGROUND MECHANICAL PLAN - AREA A
A003 PARTITION TYPES
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AS101 CONSTRUCTION PHASE SITE INFORMATION
                                                           M501 MECHANICAL DETAILS I
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                                                           ELECTRICAL
A102 OVERALL SECOND FLOOR PLAN
A103 OVERALL THIRD FLOOR PLAN
                                                           E001 ELECTRICAL SYMBOLS
A104 OVERALL ROOF PLAN
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A111 FIRST FLOOR AREA B
                                                          E201 GROUNDING PLAN
A112 SECOND FLOOR AREA A
A113 SECOND FLOOR AREA B
                                                           E400 ELECTRICAL ABBREVIATIONS AND TABLES
A114 THIRD FLOOR AREA A
A115 THIRD FLOOR AREA B
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A301 EXTERIOR ELEVATIONS
                                                           <u>PLUMBING</u>
A302 EXTERIOR ELEVATIONS
                                                           POO1 PLUMBING SYMBOLS, ABBREVIATIONS AND DRAWING INDEX
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A311 BUILDING SECTIONS
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                                                           P111 ENLARGED FIRST FLOOR PLUMBING PLAN AREA B
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                                                           P112 ENLARGED SECOND FLOOR PLUMBING PLAN AREA A
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                                                           P113 ENLARGED SECOND FLOOR PLUMBING PLAN AREA B
A512 PLAN DETAILS
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                                                           P119 ENLARGED FIRST FLOOR PLUMBING PLAN AREA B CANOPY
A530B EXTERIOR SYSTEM SHEET - VERTICAL CIRCULATION
                                                           P120 ENLARGED SECOND FLOOR PLUMBING PLAN AREA A CANOPY ROOF
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S002 GENERAL STRUCTURAL NOTES
S003 GENERAL STRUCTURAL NOTES
S101 OVERALL FIRST LEVEL FLOOR PLAN
S102 OVERALL SECOND LEVEL FLOOR PLAN
S103 OVERALL THIRD LEVEL FLOOR PLAN
S104 OVERALL ROOF LEVEL FLOOR PLAN
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GENERAL NOTE:
FOR ADA STANDARDS, PLUMBING FIXTURES' MOUNTING HEIGHTS AND CLEARANCES, SEE A002



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AUTHORITY

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ARCHITECTURAL CERTIFICATION
I hereby certify that the architectural plans, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Architect under the laws of the State of Minnesota.

Print Name: Mark Ip

Signature:

Date: 06-03-10 Reg. No.: 46001

REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM 1	6.11.10
	CONFORMANCE SET	7.12.10

DRAWN BY: MKG/MI
DESIGNED BY: SBS/TC

DATE ISSUED: 07-12-10
REVIEWED BY: SBS/TC

AEP PROJECT NUMBER 213-1882-091

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SHEET TITLE

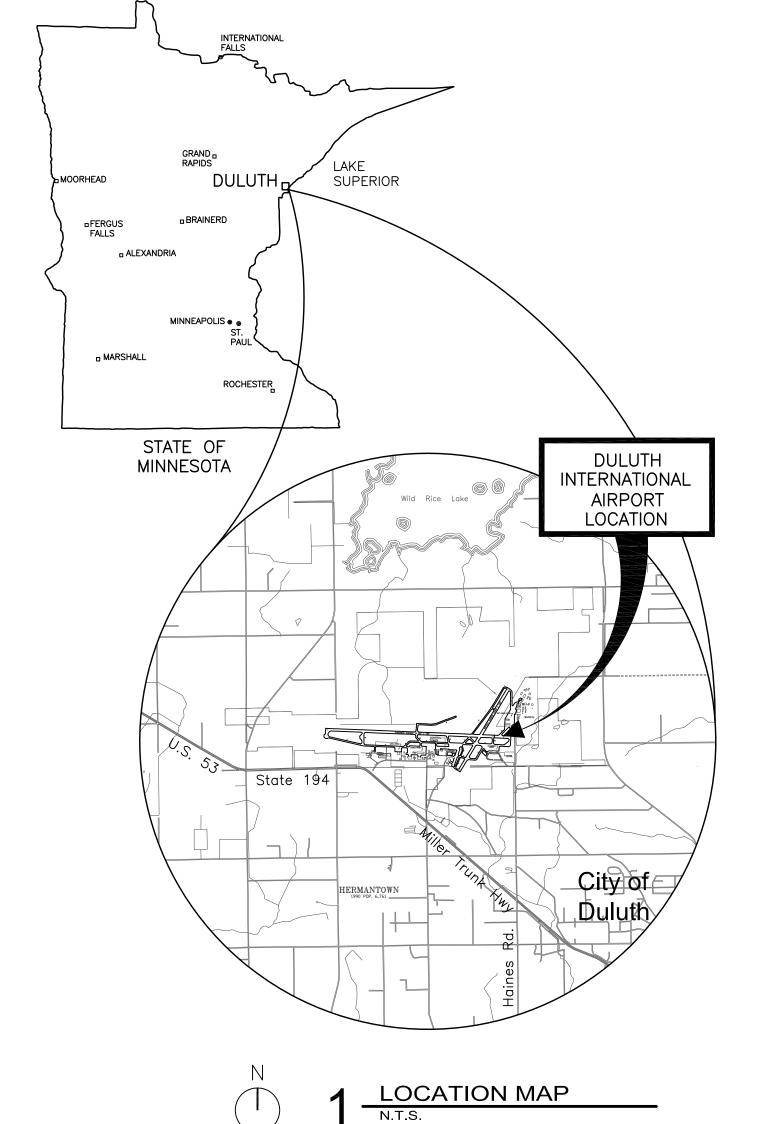
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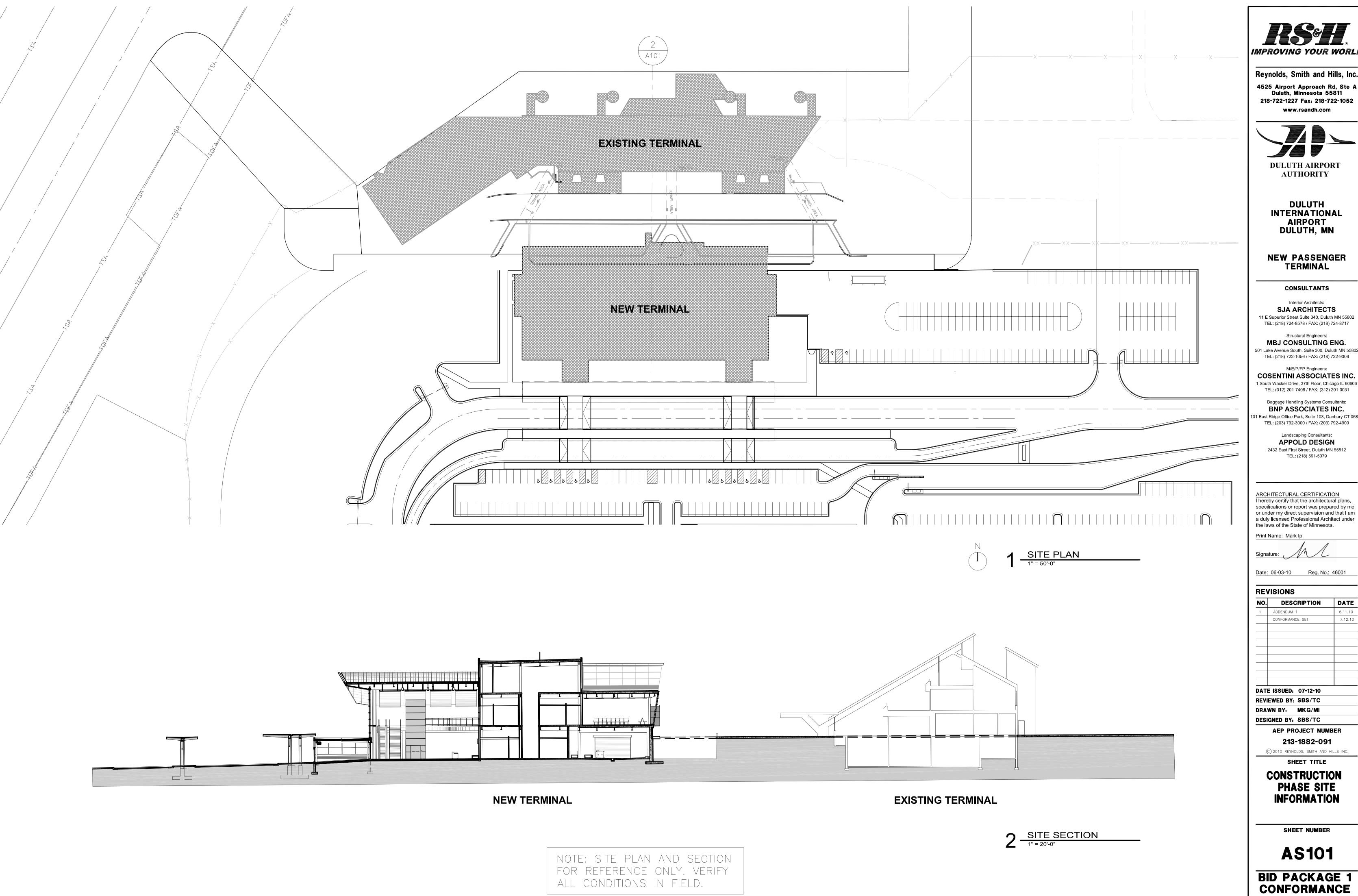
SHEET NUMBER

G101

BID PACKAGE 1
CONFORMANCE

Drawing: T: $\P\2131882.091$ Duluth New Terminal $\Cad\A\Sheets_G101$ Drawing List.dwg Plotted on: 7/15/2010 3:03 PM





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DULUTH INTERNATIONAL AIRPORT DULUTH, MN

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Print Name: Mark Ip

Date: 06-03-10 Reg. No.: 46001

REVISIONS

NE VISIONS				
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DATE ISSUED: 07-12-10 REVIEWED BY: SBS/TC DRAWN BY: MKG/MI

DESIGNED BY: SBS/TC

AEP PROJECT NUMBER

213-1882-091

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CONSTRUCTION PHASE SITE INFORMATION

SHEET NUMBER

AS101

Drawing: t:\P\2131882.091 Duluth New Terminal\Cad\A\Sheets\AS101 Construction Phase Site Information.dwg Plotted on: 6/25/2010 1:51 PM

ABBREVIATIONS

DWG. D.F.

[2:41:59 PM] Mark Ip: http://www.cracked.com/article/149_5-self-destructive-ways-people-accidentally-cured-themselves/

DRAWING

DRINKING FOUNTAIN

A F F	ADOVE FINISHED FLOOD	Γ Λ	FACIL	1 4 4 4	LANGINATED	D	DADILIC
A.F.F.	ABOVE FINISHED FLOOR	EA.	EACH	LAM. LAV.	LAMINATED LAVATORY	R.	RADIUS
A.C.T. ADJ.	ACOUSTIC CEILING TILE ADJACENT	ELEC.	ELECTRICAL WATER COOLER	LAV. L.F.	LINEAR FEET	RECT.	RECTANGULAR
A.E.S.S.	ARCH. EXPOSED STL. STRUCT.	E.W.C.	ELECTRICAL WATER COOLER			REINF.	REINFORCEMENT
A.E.S.S. A.H.U.	ARCH. EXPOSED STE. STRUCT. AIR HANDLER UNIT	EL.	ELEVATION	L. PT.	LOW POINT	REQD.	REQUIRED
		ENCL.	ENCLOSURE			REV.	REVISION
ALT.	ALTERNATE	EQ.	EQUAL	M.O.	MASONRY OPENING	R.H.	RIGHT HAND
ALUM.	ALUMINUM	EQUIP.	EQUIPMENT	MATL.	MATERIAL	R.D.	ROOF DRAIN
APPROX.	APPROXIMATE	EXIST.	EXISTING	MAX.	MAXIMUM	RM.	ROOM
ARCH.	ARCHITECTURAL	EXP. JT.	EXPANSION JOINT	MECH.	MECHANICAL		
ASPH.	ASPHALT	EXP.	EXPOSED	M.H.	MAN HOLE		00415
AUTO.	AUTOMATIC	EXT.	EXTERIOR	MTL.	METAL	SC.	SCALE
				MIN.	MINIMUM	SCHED.	SCHEDULE
BM.	BEAM	FIN.	FEET	MISC.	MISCELLANEOUS	SECT.	SECTION
B.M.	BENCH MARK	FT.	FINISH	MULL.	MULLION	SHT.	SHEET
BLKG.	BLOCKING	F.E.C.	FIRE EXTINGUISHER CABINET	M.U.F.I.D.	MULTIPLE USE FLIGHT	SIM.	SIMILAR
BD.	BOARD			111.011 11.01	INFORMATION DISPLAY	SQ. FT.	SQUARE FEET
ВОТ.	BOTTOM	F.E.	FIRE EXTINGUISHER		THE STANDARD BIST EATT	S.S.	STAINLESS STEEL
BLDG.	BUILDING	F.H.C.	FIRE HOSE CABINET	NOM.	NOMINAL	STD.	STANDARD
		F.H.R.	FIRE HOSE RACK	N.I.C.	NOT IN CONTRACT	STA.	STATION
C.F.M.F.	COLD-FORMED METAL FRAMING	FIXT.	FIXTURE	N.T.S.	NOT TO SCALE	STL.	STEEL
C.R.	CARD READER	F.I.D.	FLIGHT INFORMATION DISPLAY	NO.	NUMBER	STRUCT.	STRUCTURAL
CPT.	CARPET	FL.	FLOOR	NO.	NOMBER		
CLG.	CEILING	F.D.	FLOOR FLOOR DRAIN	O.C.	ON CENTER	SUSP.	SUSPENDED
	CENTERLINE	FLUOR.		OPG.	OPENING	SYM.	SYMBOL
Q or C.L.			FLUORESCENT	OPP.	OPPOSITE		
C.T.	CERAMIC TILE	FR.	FRAME	OZ.	OUNCE	TEL.	TELEPHONE
CL.	CLEAR			0.D.	OUTSIDE DIAMETER	THK.	THICKNESS
CTR.	CENTER	GA.	GAUGE	0.D. 0.A.	OVERALL	TSA	TRANSPORTATION SECURITY
C.O.	CLEAN OUT	GALV.	GALVANIZED	0. W. S. J.	OPEN WEB STEEL JOIST		ADMINISTRATION
COL. COMP.	COLUMN COMPRESSIBLE			O. W. J. U.	OFLIN WED STELL JOIST	TYP.	TYPICAL
CONC.	CONCRETE	GYP.BD.	GYPSUM BOARD	PR.	DAID		
	CONCRETE BLOCK				PAIR	U.L.	UNDERWRITERS LABORATORIES
CONC. BLK.	CONCRETE BLOCK CONCRETE MASONRY UNIT	HBS	HANDLING BAGGAGE SYSTEM	P.J.	PANEL JOINT	U.O.N.	UNLESS OTHERWISE NOTED
CMU CONN.	CONNECTION	HDW.	HARDWARE	PLAS.	PLASTER		
CONT.	CONTINUOUS	HD.	HEAD	PL.	PLATE	V.B.	VAPOR BARRIER
C.J.	CONTROL JOINT		HIGH POINT	PLMBG.	PLUMBING	VERT.	VERTICAL
CORR.		H.P.		PLYWD.	PLYWOOD	V.C.T.	VINYL COMPOSITION TILE
	CORRIDOR	H.P.C.	HIGH PERFORMANCE COATING	P.V.C.	POLYVINYLCHLORIDE	V.W.C.	VINYL WALL COVERING
CU.	CUBIC	HT.	HEIGHT	PT.	POINT	VOL.	VOLUME
C.W.	CURTAINWALL	H.M.	HOLLOW METAL	LBS.	POUNDS	V O L.	VOLOME
		HORIZ.	HORIZONTAL	PSI.	POUNDS PER SQUARE INCH	VA. 1. 1. 1	WARALOOK HERCEY
DEG.	DEGREE			P.T.	PRESSURE TREATED	W.H.I.	WARNOCK HERSEY
DET.	DETAIL	I.D.	INCHES	PRPTY.	PROPERTY		INTERNATIONAL
DIA.	DIAMETER	IN.	INSIDE DIAMETER			W.C.	WATER CLOSET
DIM.	DIMENSION	INSUL.	INSULATION	QTY.	QUANTITY	WT.	WEIGHT
DIST.	DISTANCE	INT.	INTERIOR	Q.T.	QUARRY TILE	W.W.F.	WELDED WIRE FABRIC
DIV.	DIVIDER	JAN.	JANITOR			WD.	WOOD
DR.	DOOR	JAN. JT.	JOINT			W.P.	WORKING POINT
DN.	DOWN	UI.	OONT				

PROJECT GENERAL NOTES:

1. ALL WORK SHALL CONFORM TO ALL APPLICABLE CODES, STANDARDS AND GOVERNING AUTHORITIES.

2. REFER TO CIVIL, ARCHITECTURAL, MECHANICAL, PLUMBING, STRUCTURAL AND ELECTRICAL DRAWINGS FOR COORDINATION OF WORK

3. EACH TRADE CONTRACTOR SHALL VISIT THE SITE AND BECOME KNOWLEDGEABLE OF CONDITIONS THEREIN. EACH TRADE CONTRACTOR SHALL INVESTIGATE, VERIFY AND BE RESPONSIBLE FOR ALL THE REQUIREMENTS OF THE PROJECT AND SHALL NOTIFY THE ARCHITECT AND OWNER OF ANY CONDITIONS REQUIRING INFORMATION BEFORE PROCEEDING WITH THE WORK. EXISTING BUILDING DRAWINGS ARE AVAILABLE FROM THE OWNER FOR REVIEW. THE DOCUMENTS AVAILABLE MAY NOT BE REPRESENTATIVE OF ALL AS—BUILT CONDITIONS

4. THE TRADE CONTRACTORS SHALL PROTECT ALL EXISTING SITE ELEMENTS FROM DAMAGE DUE TO ALTERATION AND CONSTRUCTION OPERATIONS AND REPAIR OR REPLACE ELEMENTS DAMAGED DURING THE PROJECT.

5. ANY UTILITY SHUT-OFFS AS REQUIRED BY THE CONTRACTOR FOR COMPLETION OF THE WORK SUCH AS ELECTRICAL, WATER, SEWER, TELEPHONE, GAS ETC. MUST BE SCHEDULED WITH THE OWNER 72 HOURS PRIOR TO COMMENCING THE WORK. ALL WORK TO BE DONE IN OFF HOURS OR AT LOW-USE HOURS AS APPROVED BY THE OWNER.

6. DRAWINGS ARE TO BE ISSUED TO THE SUBCONTRACTORS IN COMPLETE SETS SO THAT THE EXTENT AND COORDINATION OF THE WORK IS MADE POSSIBLE.

7. DETAILS SHOWN ARE INTENDED TO BE INDICATIVE OF THE PROFILES AND TYPE OF DETAILING REQUIRED FOR THE WORK. DETAILS NOT SHOWN ARE SIMILAR IN CHARACTER TO THOSE DETAILED.

8. WHERE SPECIFIC DIMENSIONS, DETAILS AND DESIGN INTENT CANNOT BE DETERMINED, NOTIFY THE ARCHITECT IN WRITING BEFORE PROCEEDING WITH ANY WORK IN QUESTION.

9. DIMENSIONS SHALL GOVERN. DO NOT SCALE DRAWINGS. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT IN WRITING OF ANY DISCREPANCIES, OMISSIONS AND/OR CONFLICTS BEFORE PROCEEDING WITH THE WORK.

10. ALL DIMENSIONS SHALL BE VERIFIED ON THE SITE BEFORE PROCEEDING WITH THE WORK. NOTIFY THE ARCHITECT IN WRITING OF ANY DISCREPANCIES.

11. UNLESS NOTED OTHERWISE, ALL WALLS AND PARTITIONS ARE DIMENSIONED TO THE FINISH FACE OF THE METAL FRAMING

12. UNLESS NOTED OTHERWISE, ALL FASTENERS AND FASTENING DEVICES ARE TO BE CONCEALED IN ALL FINISHED SPACES.

13. ANY PIPING, DUCTS, CONDUITS, ETC. THAT PENETRATE FIRE—RATED WALLS SHALL BE INSTALLED IN A MANNER THAT WILL PRESERVE THE FIRE INTEGRITY OF THE FLOOR OR WALL. FIRE STOP RATINGS OF WALLS WHERE PENETRATIONS OCCUR. PROVIDE FIRE DAMPERS IN DUCTS PENETRATING FIRE—RATED WALLS TO MEET THE APPLICABLE BUILDING CODES. REFER TO ALL DRAWINGS FOR EXTENT AND FIRE RATING REQUIREMENTS. THE FIRE RATING OF THE FIRESTOP MUST BE EQUAL TO OR GREATER TO THE MINIMUM RATING OF THE FLOOR, ROOF OR WALL ASSEMBLY. ALL FIREPROOFING REPLACEMENT OR INSTALLATION TO BE COMPLETED BY CONTRACTOR PERFORMING THE PENETRATION.

14. ALL JOINTS OF ANY ELEMENT OF CONSTRUCTION WHICH ARE REQUIRED TO HAVE A FIRE-RESISTANCE RATING SHALL BE INSTALLED PER THE MANUFACTURER'S PUBLISHED TESTED ASSEMBLIES, SHALL BE TIGHT AND SHALL PREVENT THE PASSAGE OF SMOKE AND FLAME.

15. WHERE THE FIRE RATING OF WALLS ARE NOTED ON THE DRAWINGS, THE FIRE RATING SHALL APPLY TO THE ENTIRE PERIMETER ENCLOSURE OF THE ROOM OR SPACE FOR THE FULL LENGTH AND HEIGHT OF AREAS BEING SEPARATED, EXTENDING TO THE UNDERSIDE OF THE FLOOR OR ROOF DECK.

16. ALL DISSIMILAR METALS SHALL BE EFFECTIVELY ISOLATED FROM EACH OTHER BY GASKETS OR COATINGS OR BOTH TO AVOID GALVANIC CORROSION ACTION.

17. ALL FERROUS METAL WORK LOCATED ON THE EXTERIOR OR IN NON CONDITIONED SPACES (INTERIOR) SHALL BE HOT—DIPPED GALVANIZED (MINIMUM G—90 COATING).

18. THE EXTENT OF THE WORK SHOWN ON THE PLANS AND DETAILS REFLECTS THE BEST JUDGMENT OF THE ARCHITECT/ENGINEER. THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE EXISTING CONDITIONS AND ADVISE THE ARCHITECT IN WRITING OF ANY SITUATION THAT WOULD NOT ALLOW HIM TO PROCEED ON THE BASIS OF THESE DOCUMENTS.

19. THE ARCHITECT/ENGINEER SELECTION OF MATERIALS AND DETAILS DOES NOT RELIEVE THE CONTRACTOR FROM VERIFYING WITH THE MATERIAL SUPPLIERS THAT THE PROPOSED MATERIALS ARE CORRECT AND PROPER FOR THE INTENDED APPLICATION

20. THE CONTRACTOR SHALL COORDINATE THE FINAL LOCATIONS OF THE POWER/DATA/COMMUNICATION OUTLETS.

21. ALL WORK SHALL CONFORM WITH MINNESOTA ACCESSIBILITY CODE AND THE IAC (SECTIONS 400.310(s) AND 400.310(u)).

ILSELL.

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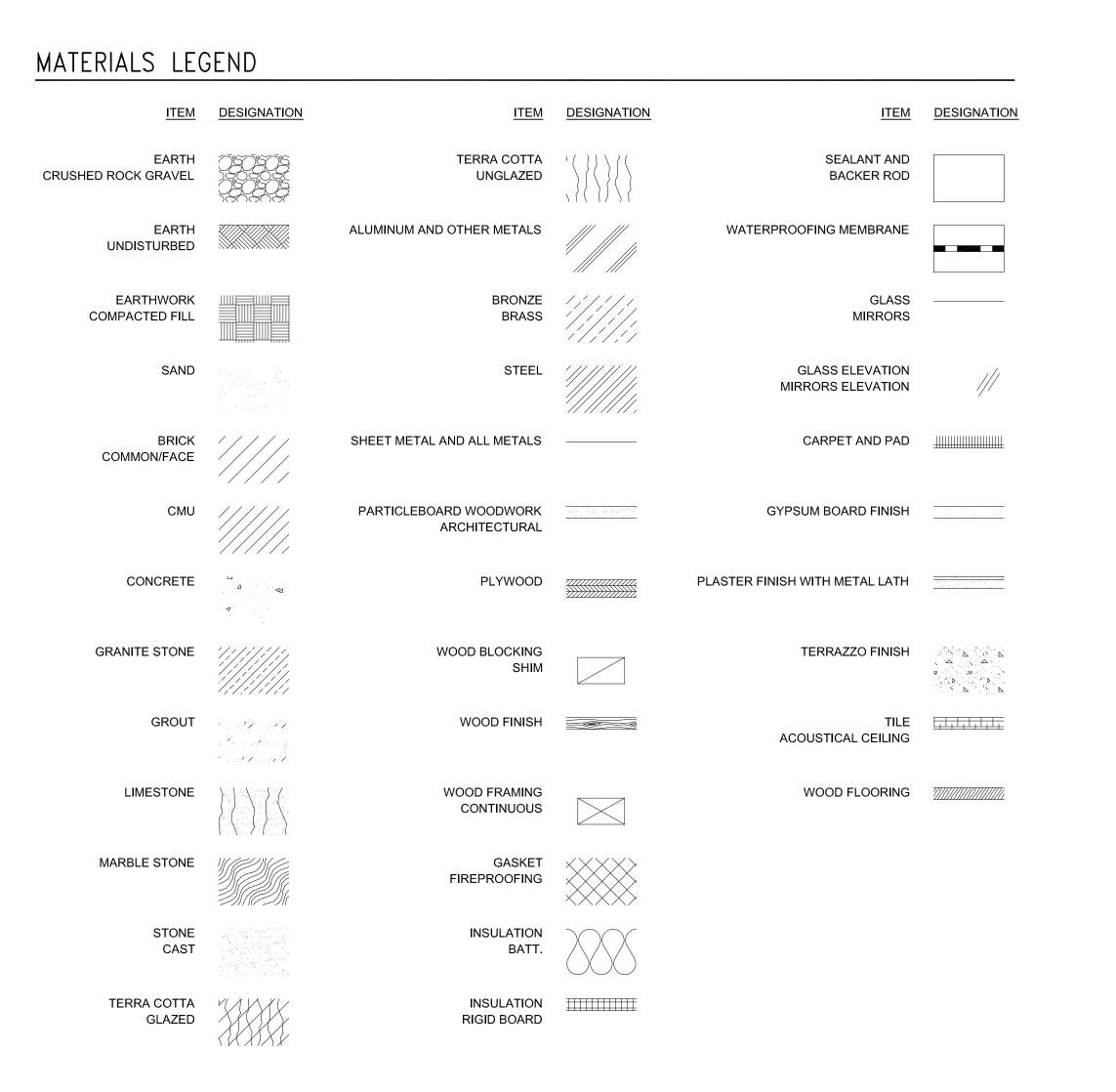
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SHEET TITLE

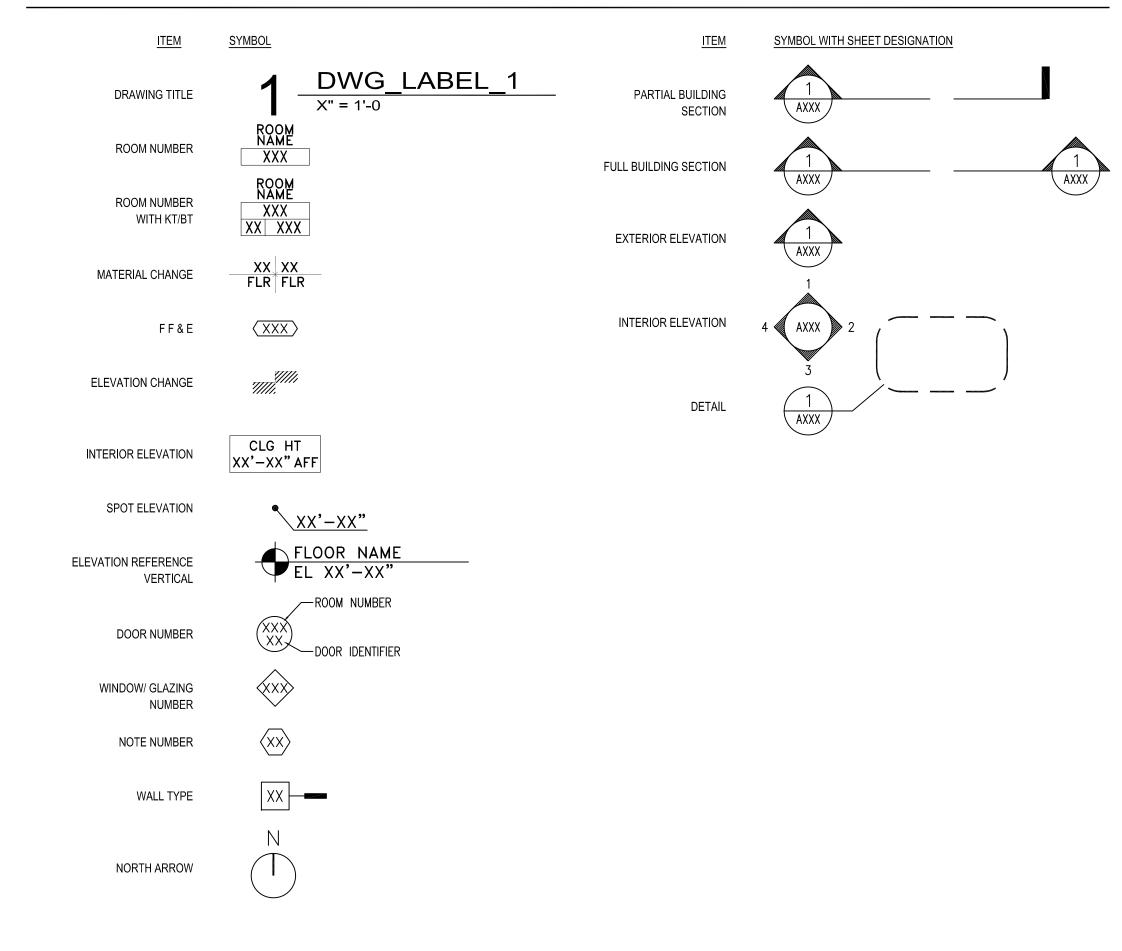
ABBREVIATIONS AND GENERAL NOTES

A001

SHEET NUMBER



SYMBOLS LEGEND



ACCESSIBILITY NOTES

A. GENERAL REQUIREMENTS

THIS PROJECT WILL COMPLY WITH ALL IAC 400.310 - NEW CONSTRUCTION.

1. THE ENTRANCE IS ACCESSIBLE PER IAC 400.310(k).

2. ALL PASSENGER ELEVATORS PROVIDED IN A BUILDING OR FACILITY SHALL BE ACCESSIBLE, SHALL SERVE ALL LEVELS OF A BUILDING OR FACILITY, SHALL BE ON AN ACCESSIBLE ROUTE AND SHALL COMPLY WITH THE ASME A 17.1-1996.

3. ALL DOORS LEADING TO REQUIRED ACCESSIBLE ROOMS AND SPACES SHALL BE A MINIMUM OF 3'-0" WIDE, HAVE LEVER OPERATED HARDWARE (OR EQUAL), HAVE A MININUM OPENING FORCE OF 5 LBF, AND FULLY COMPLY WITH IAC 400.310(j).

4. ALL DOORS LEADING TO HAZARDOUS ROOMS WILL COMPLY WITH THE ABOVE AND, IN ADDITION, WILL HAVE KNURLED OPERATING HARDWARE (I.E., ELECTRICAL/TELEPHONE ROOMS).

5. ALL ENVIRONMENTAL CONTROLS AND OPERATING MECHANISMS WILL COMPLY WITH IAC 400.310(r) (FRONT REACH BETWEEN 15" AND 48" AFF).

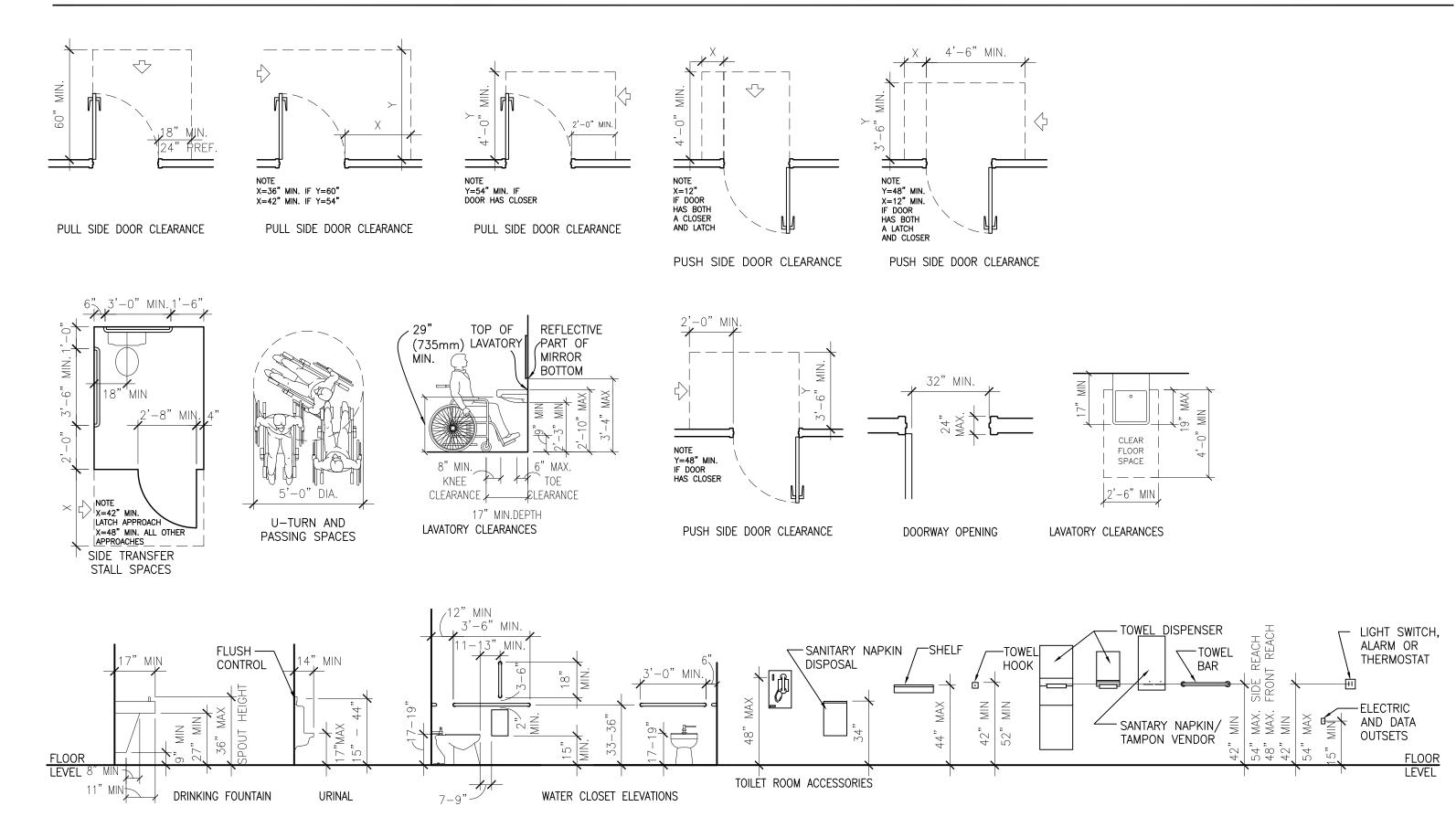
6. ALL EMERGENCY WARNING ALARMS, WHERE PROVIDED, SHALL BE BOTH AUDIBLE AND VISUAL AND COMPLY WITH IAC 400.310(s). THE VISUAL ALARMS WILL BE FLASHING TYPE WHERE THE FLASHING IS SYNCHRONIZED AND IN COMPLIANCE FOR INTENSITY AND FREQUENCY, ALL TENANT SPACES WILL BE WIRED FOR FUTURE INSTALLATION OF EMERGENCY WARNING ALARMS ON AN AS NEEDED BASIS (SEE SECURITY DRAWINGS).

7. ANY NEW REQUIRED SIGNAGE IN CONTRACT SHALL BE INSTALLED AS REQUIRED PER IAC 400.310(u).

8. TOILET ROOMS SERVING PUBLIC AREAS (I.E., LOBBIES, CONCOURSE, ETC.) WILL FULLY COMPLY WITH IAC 400.310(n).

9. REFER TO CHAPTER 1341 MN BUILDING CODE

ACCESSIBILITY CLEARANCES





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M/E/P/FP Engineers: COSENTINI ASSOCIATES INC. 1 South Wacker Drive, 37th Floor, Chicago IL 60606 TEL: (312) 201-7408 / FAX: (312) 201-0031

Baggage Handling Systems Consultants:

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Landscaping Consultants: APPOLD DESIGN

2432 East First Street, Duluth MN 55812 TEL: (218) 591-5079

ARCHITECTURAL CERTIFICATION

I hereby certify that the architectural plans, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Architect under the laws of the State of Minnesota.

Print Name: Mark Ip

Signature:	MI
	\mathcal{O}

Date: 06-03-10 Reg. No.: 46001

REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM 1	6.11.10
	CONFORMANCE SET	7.12.10

DATE ISSUED: 07-12-10
REVIEWED BY: SBS/TC
DRAWN BY: MKG/MI

DESIGNED BY: SBS/TC

AEP PROJECT NUMBER

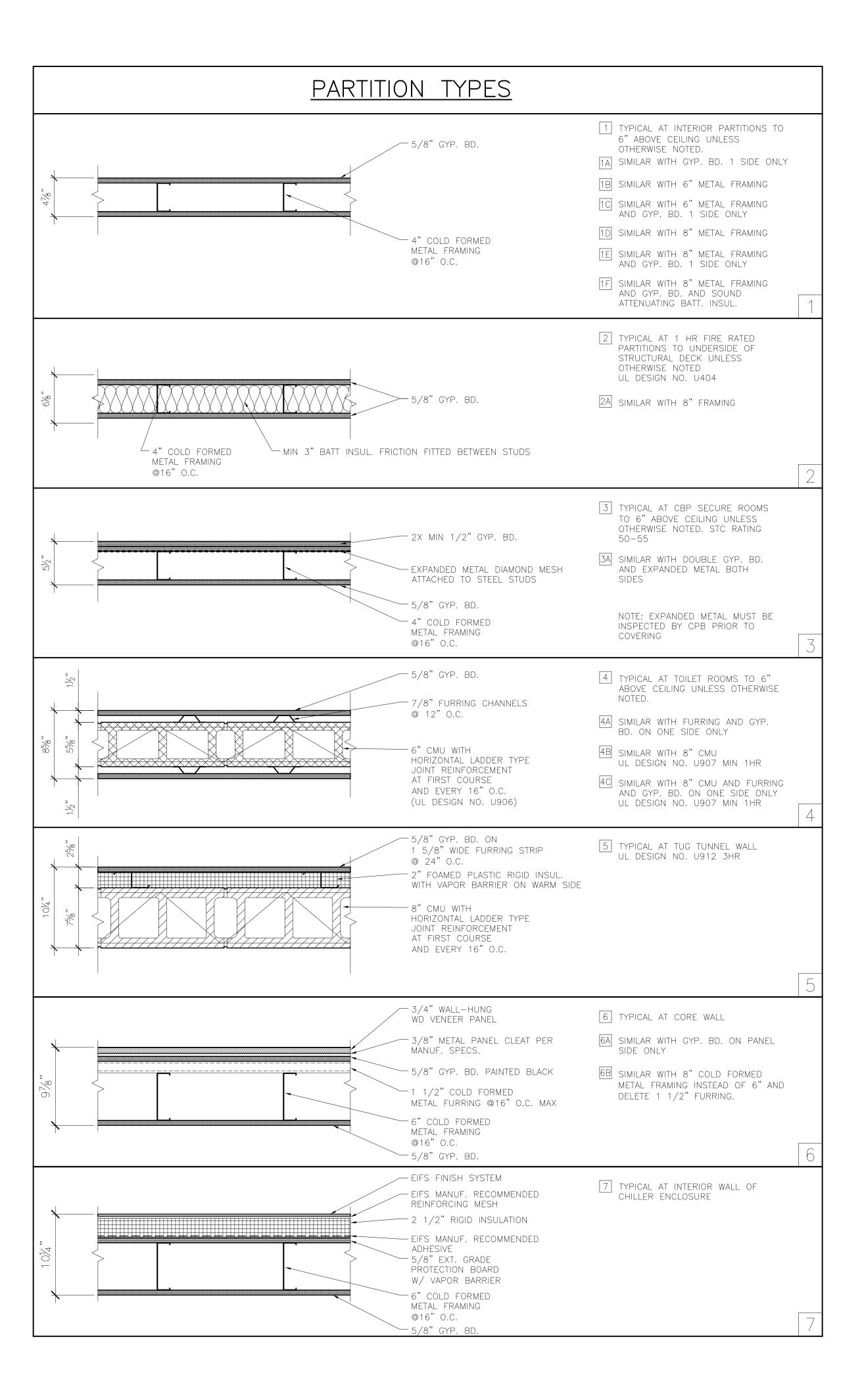
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SYMBOLS AND ACCESSIBILITY CLEARANCES

SHEET NUMBER

A002





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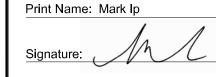
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CONFORMANCE SET	7.12.10
	ADDENDUM 1

DRAWN BY: MKG/MI
DESIGNED BY: SBS/TC

REVIEWED BY: SBS/TC

AEP PROJECT NUMBER

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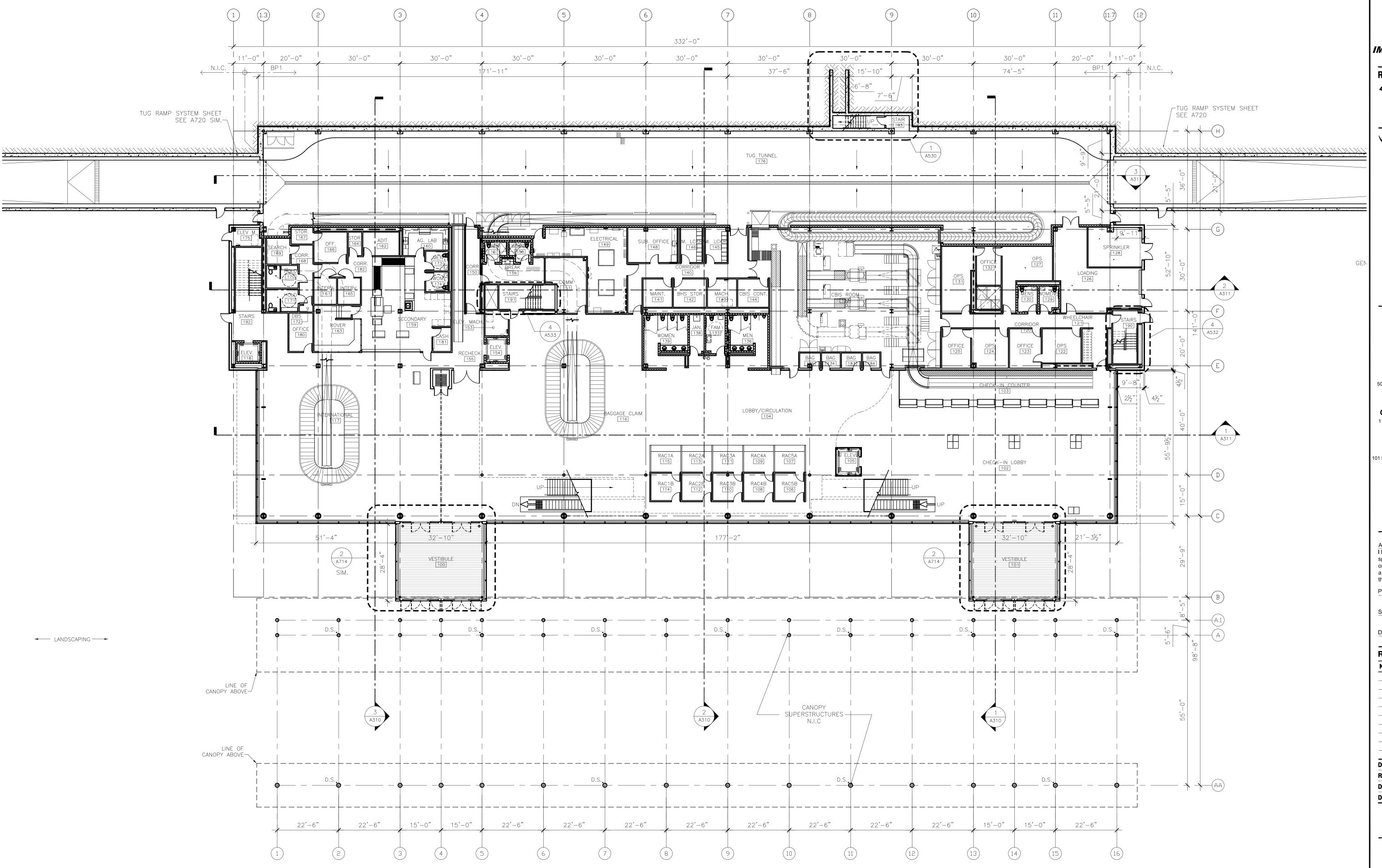
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SHEET NUMBER

A003

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OVERALL FIRST FLOOR PLAN

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Signature:

Date: 06-03-10 Reg. No.: 46001

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NO. DESCRIP

NO. DESCRIPTION DATE

1 ADDENDUM 1 6.11.10
CONFORMANCE SET 7.12.10

DATE ISSUED: 07-12-10

REVIEWED BY: SBS/TC
DRAWN BY: MKG/MI
DESIGNED BY: SBS/TC

AEP PROJECT NUMBER

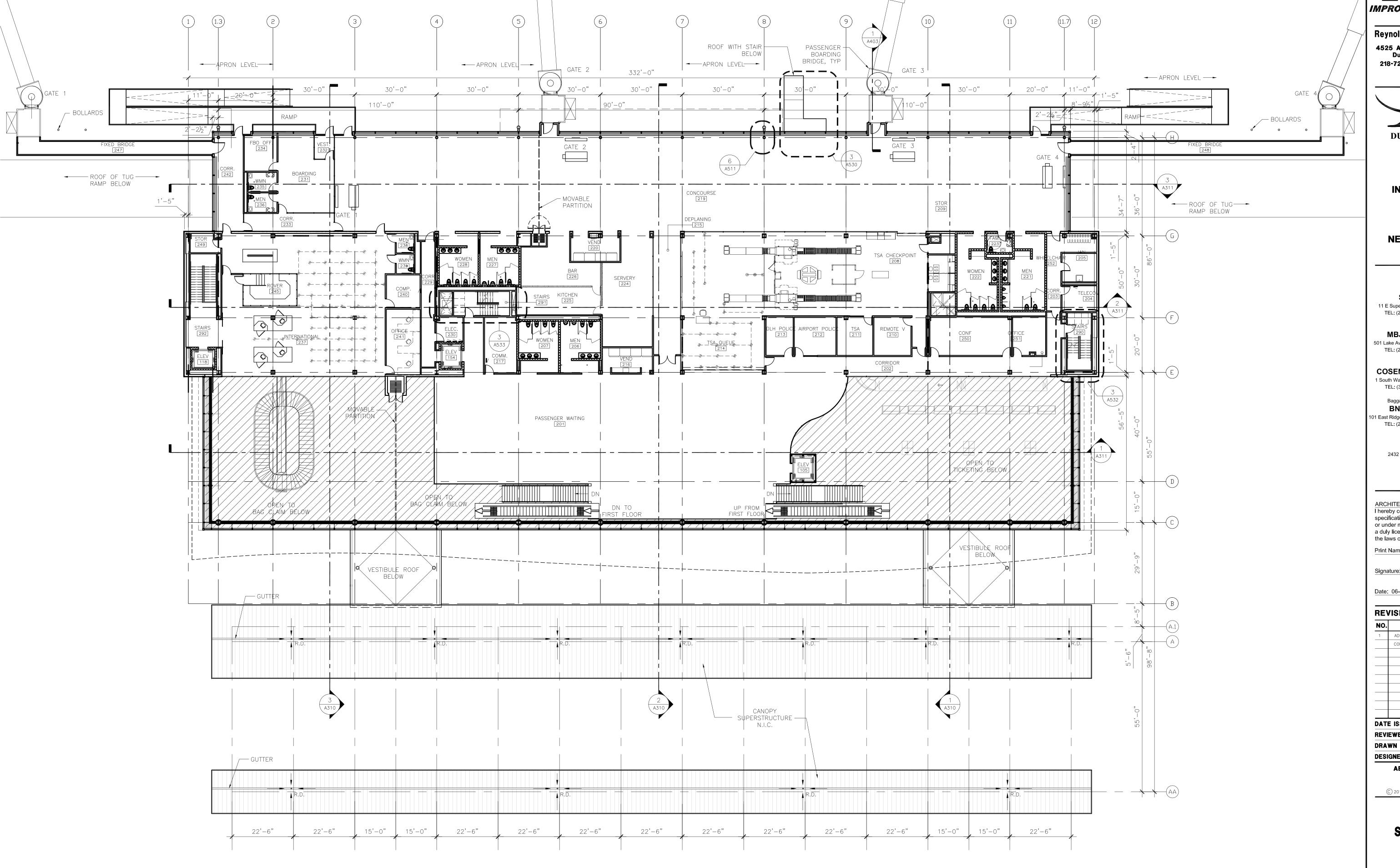
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SHEET TITLE

OVERALL FIRST FLOOR PLAN

SHEET NUMBER

A101



NOTE: IN FLOOR AIR DISTRIBUTION SYSTEM N.I.C.



SECOND LEVEL FLOOR PLAN

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Print Name: Mark Ip

Date: 06-03-10 Reg. No.: 46001

REVISIONS NO. DESCRIPTION

NO.	DESCRIPTION	DATE
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	CONFORMANCE SET	7.12.10

DATE ISSUED: 07-12-10 REVIEWED BY: SBS/TC DRAWN BY: MKG/MI

DESIGNED BY: SBS/TC **AEP PROJECT NUMBER**

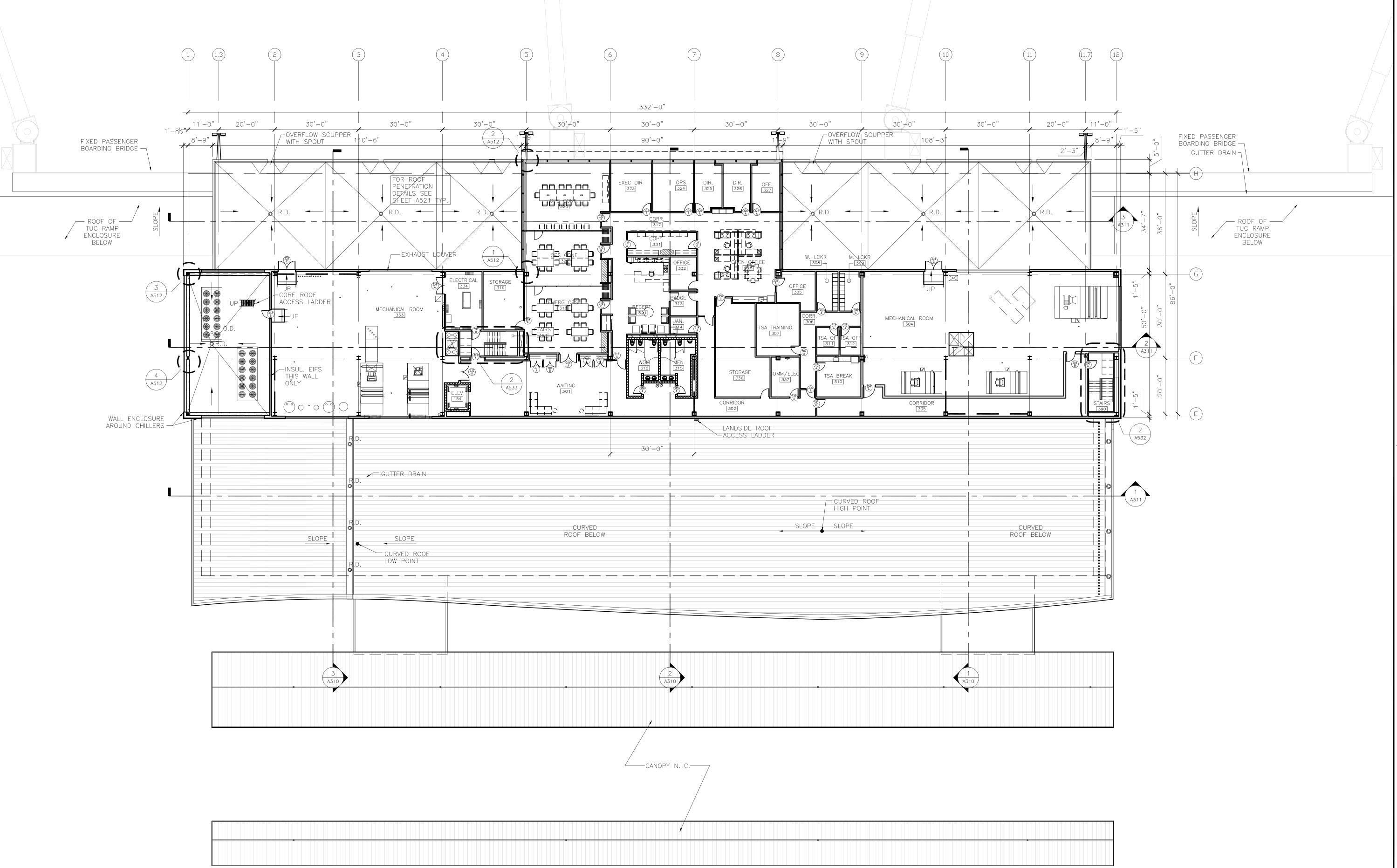
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OVERALL SECOND FLOOR **PLAN**

SHEET NUMBER

A102



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Signature:

Date: 06-03-10 Reg. No.: 46001

REVISIONS

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	CONFORMANCE SET	7.12
)ATE	ISSUED: 07-12-10	

REVIEWED BY: SBS/TC
DRAWN BY: MKG/MI
DESIGNED BY: SBS/TC

AEP PROJECT NUMBER

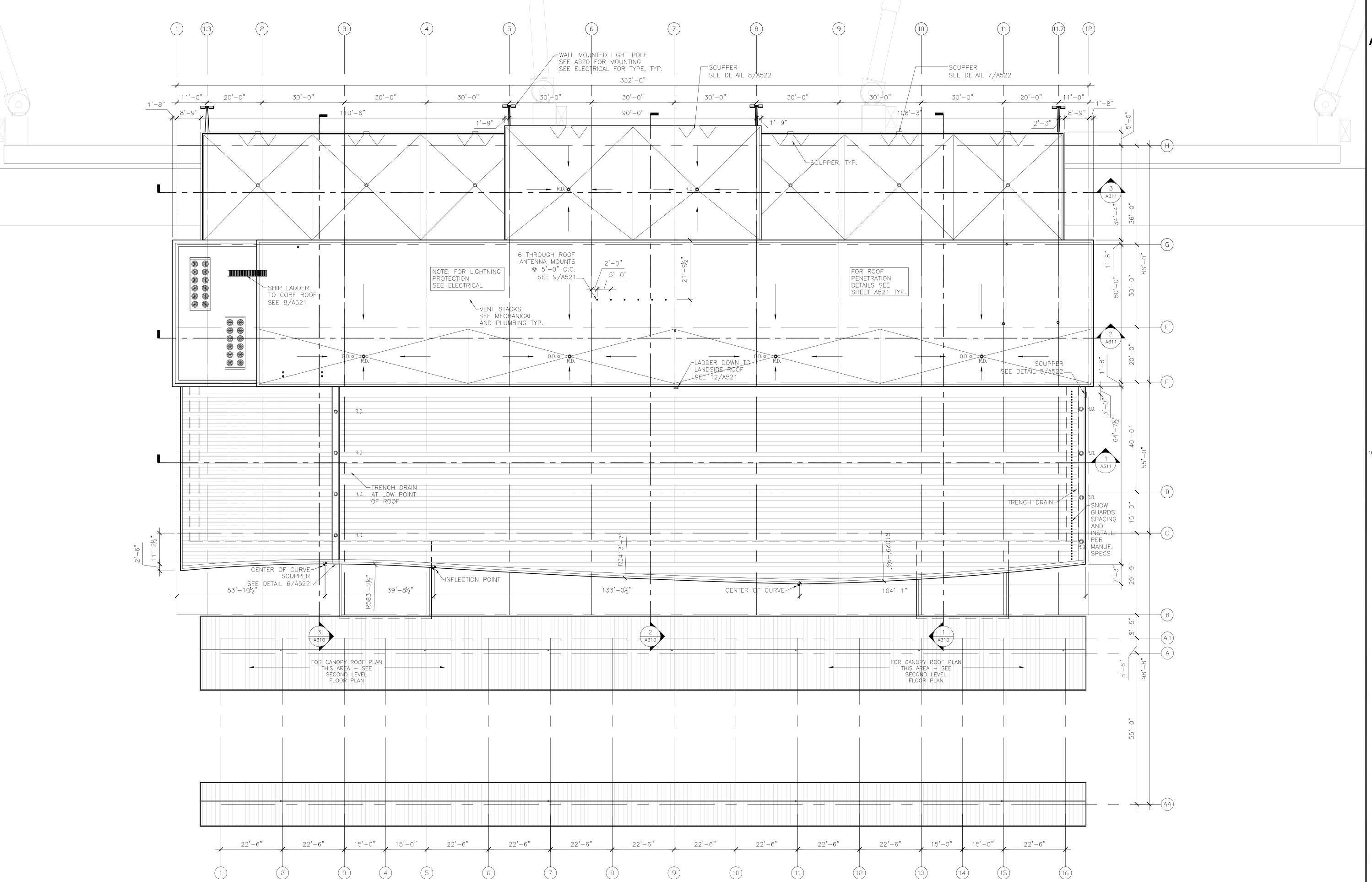
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OVERALL THIRD FLOOR PLAN

SHEET NUMBER

A103



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Print Name: Mark Ip

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REVIEWED BY: SBS/TC DRAWN BY: MKG/MI DESIGNED BY: SBS/TC

AEP PROJECT NUMBER

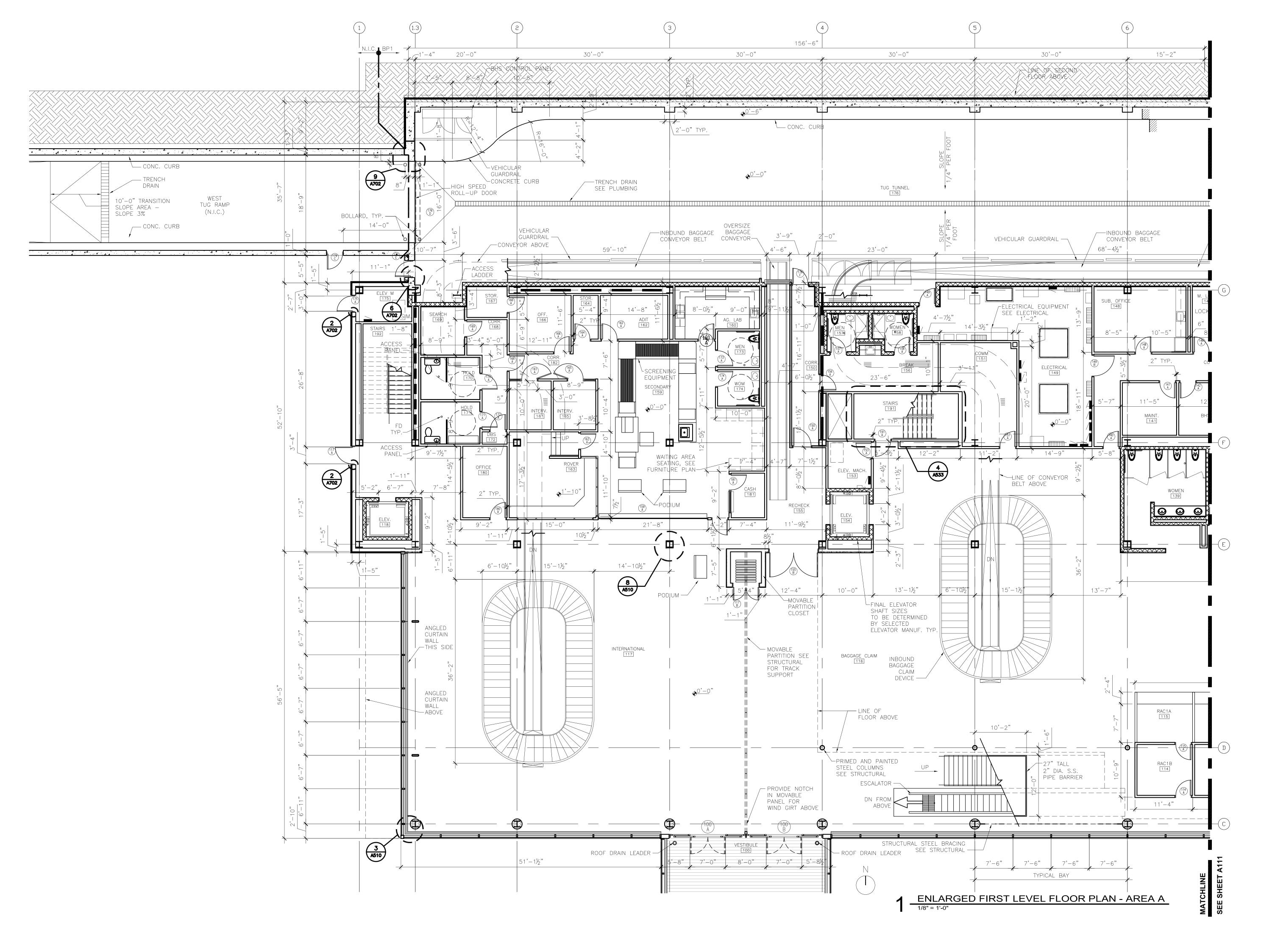
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> **OVERALL ROOF PLAN**

SHEET NUMBER

A104





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Signature:

Date: 06-03-10 Reg. No.: 46001

REVISIONS

NO. DESCRIPTION

1 ADDENDUM 1 6.11.10
CONFORMANCE SET 7.12.10

DATE ISSUED: 07-12-10

REVIEWED BY: SBS/TC
DRAWN BY: MKG/MI

DESIGNED BY: SBS/TC

AEP PROJECT NUMBER

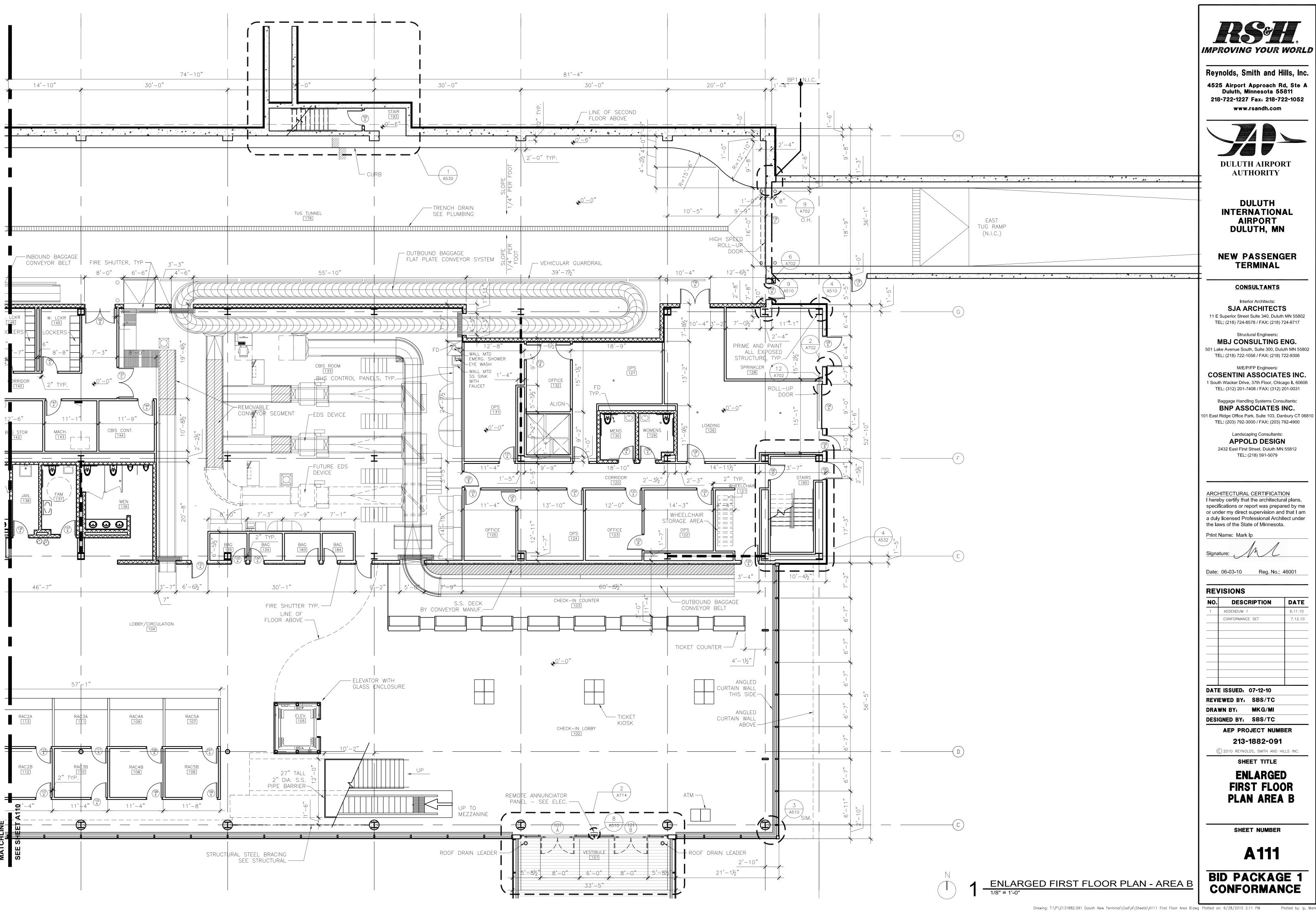
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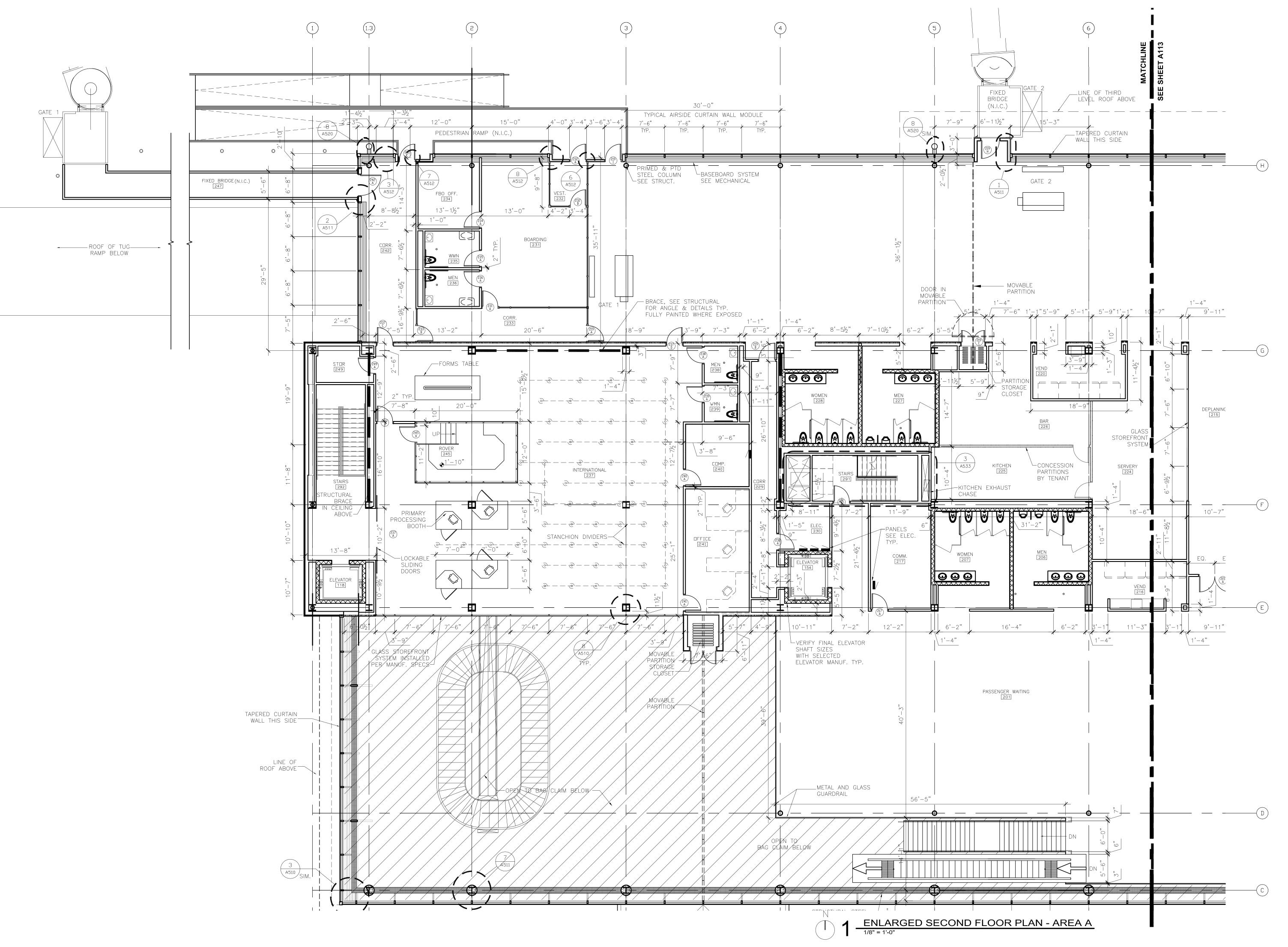
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ENLARGED FIRST FLOOR PLAN AREA A

SHEET NUMBER

A110







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Signature: Par No. 46004

Date: 06-03-10 Reg. No.: 46001

REVISIONS

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DRAWN BY: MKG/MI
DESIGNED BY: SBS/TC

REVIEWED BY: SBS/TC

AEP PROJECT NUMBER

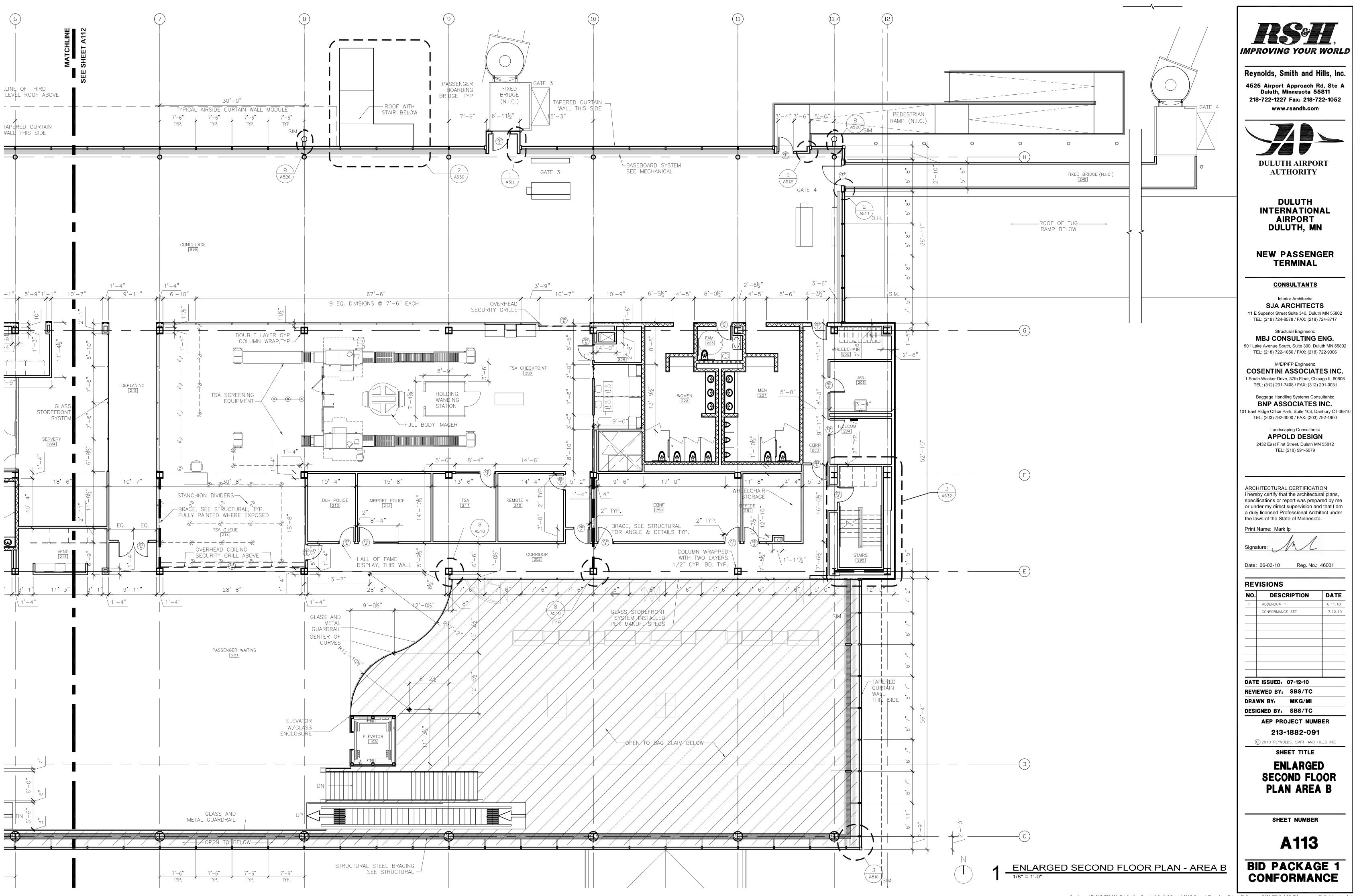
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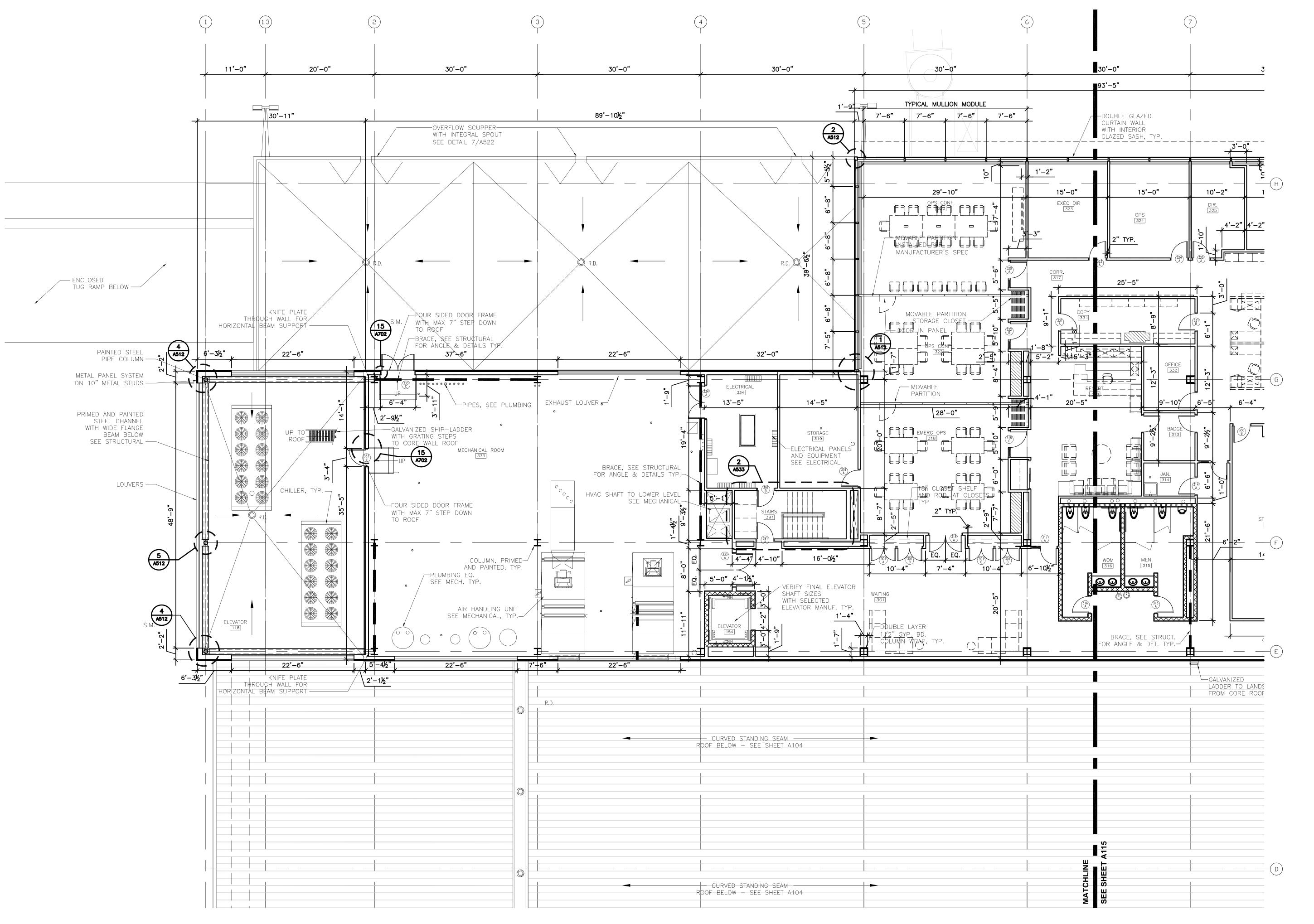
SHEET TITLE

ENLARGED SECOND FLOOR PLAN AREA A

SHEET NUMBER

A112





ENLARGED THIRD LEVEL FLOOR PLAN - AREA A

1/8" = 1'-0"



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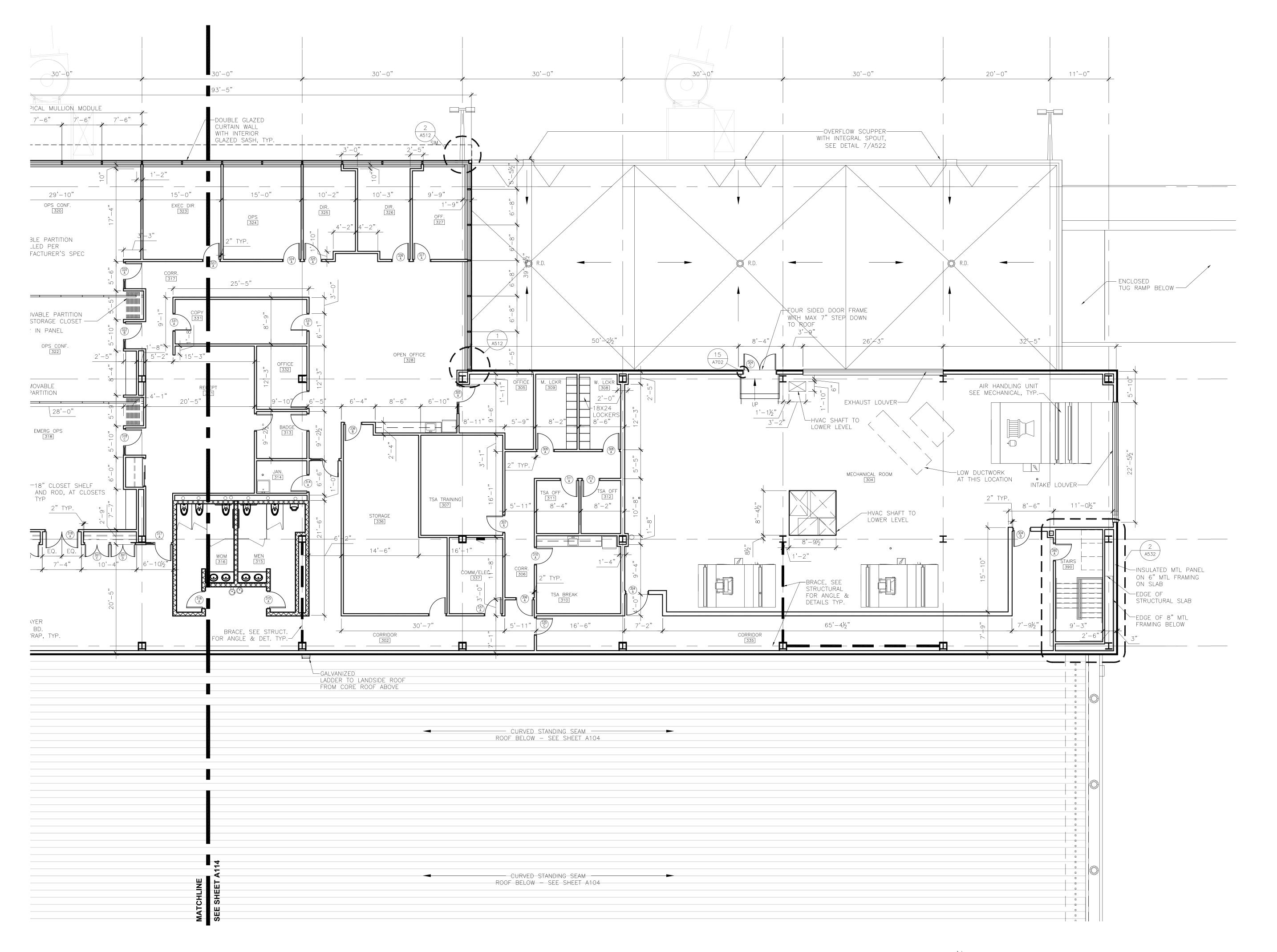
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ENLARGED

THIRD FLOOR
PLAN AREA A

SHEET NUMBER

A114





ENLARGED THIRD FLOOR PLAN - AREA B

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Date: 06-03-10 Reg. No.: 46001

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REVIEWED BY: SBS/TC DRAWN BY: MKG/MI DESIGNED BY: SBS/TC

AEP PROJECT NUMBER

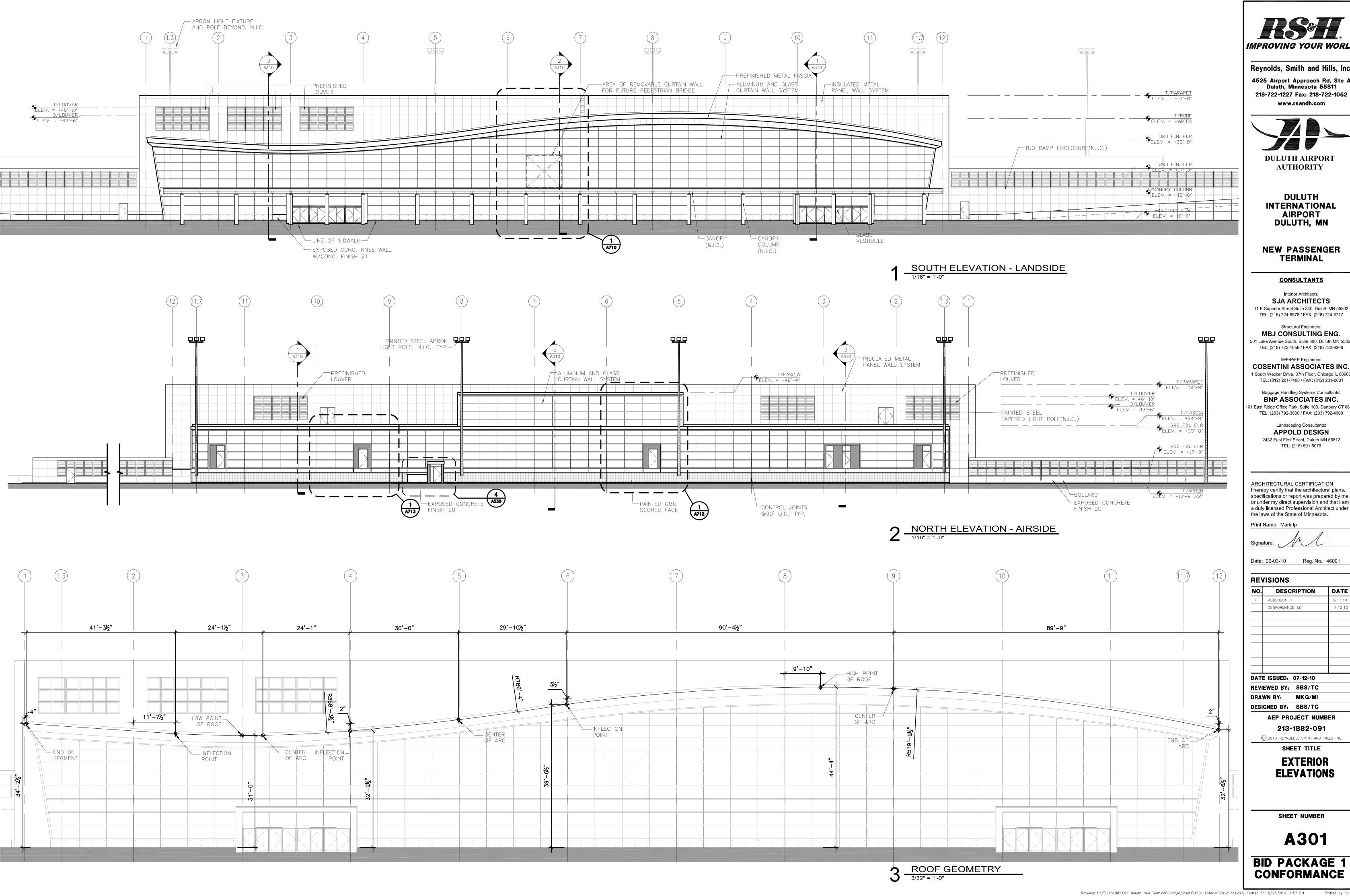
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> **ENLARGED** THIRD FLOOR PLAN AREA B

SHEET NUMBER

A115





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DATE NO. DESCRIPTION ADDENDUM 1 7.12.10 CONFORMANCE SET **DATE ISSUED: 07-12-10**

REVIEWED BY: SBS/TC DRAWN BY: MKG/MI

DESIGNED BY: SBS/TC **AEP PROJECT NUMBER**

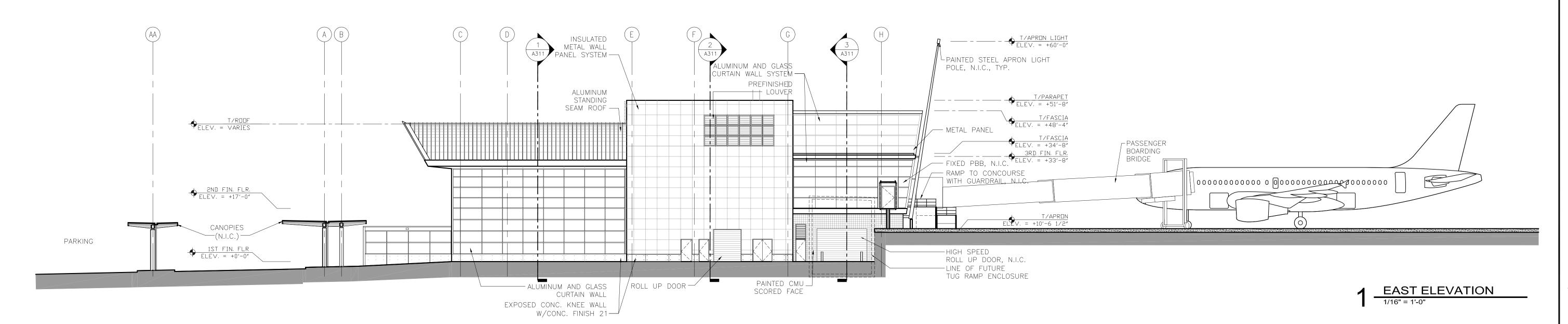
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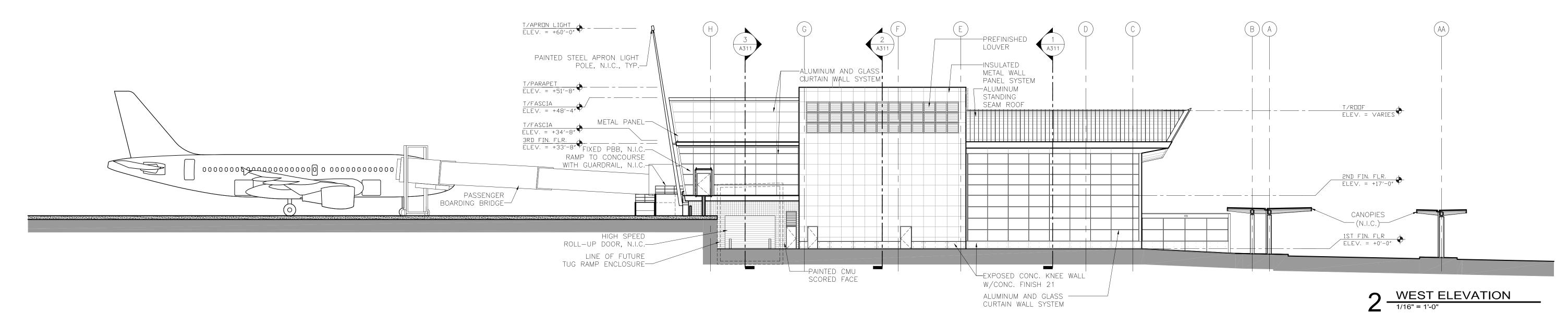
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> **EXTERIOR ELEVATIONS**

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A301





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CONSULTANTS

Interior Architects:

SJA ARCHITECTS

11 E Superior Street Suite 340, Duluth MN 55802
TEL: (218) 724-8578 / FAX: (218) 724-8717

Structural Engineers: MBJ CONSULTING ENG. 501 Lake Avenue South, Suite 300, Duluth MN 55802

TEL: (218) 722-1056 / FAX: (218) 722-9306

M/E/P/FP Engineers:

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Baggage Handling Systems Consultants:
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TEL: (203) 792-3000 / FAX: (203) 792-4900

Landscaping Consultants: APPOLD DESIGN 2432 East First Street, Duluth MN 55812 TEL: (218) 591-5079

ARCHITECTURAL CERTIFICATION
I hereby certify that the architectural plans, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Architect under the laws of the State of Minnesota.

Print Name: Mark Ip

Signature:

Date: 06-03-10 Reg. No.: 46001

REVISIONS

DESCRIPTION	DATE		
ADDENDUM 1	6.11.10		
CONFORMANCE SET	7.12.10		
ISSUED: 07-12-10			
	ADDENDUM 1		

REVIEWED BY: SBS/TC
DRAWN BY: MKG/MI
DESIGNED BY: SBS/TC

AEP PROJECT NUMBER

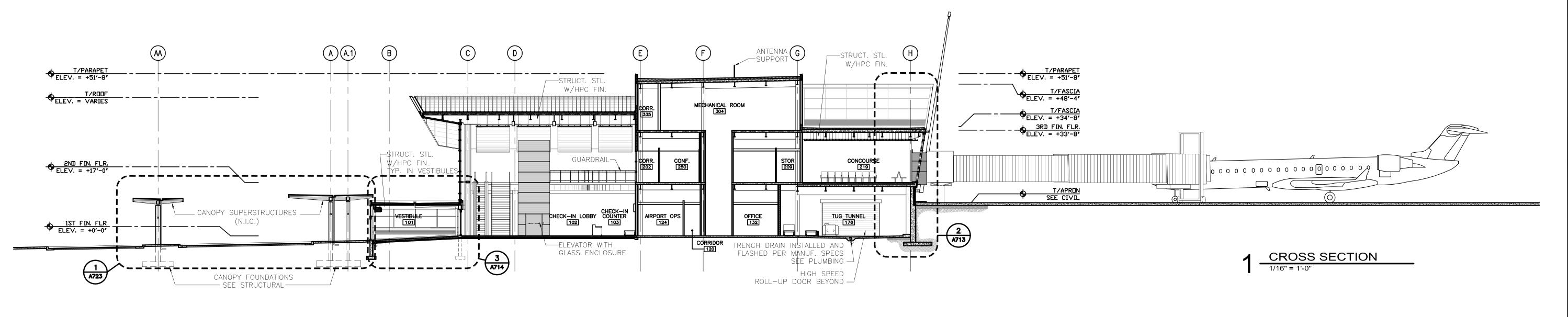
213-1882-091

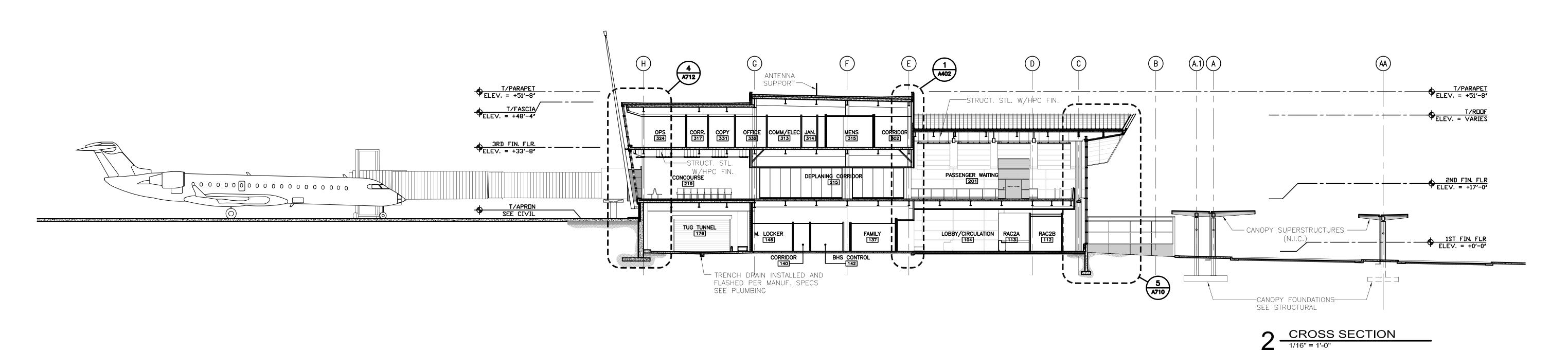
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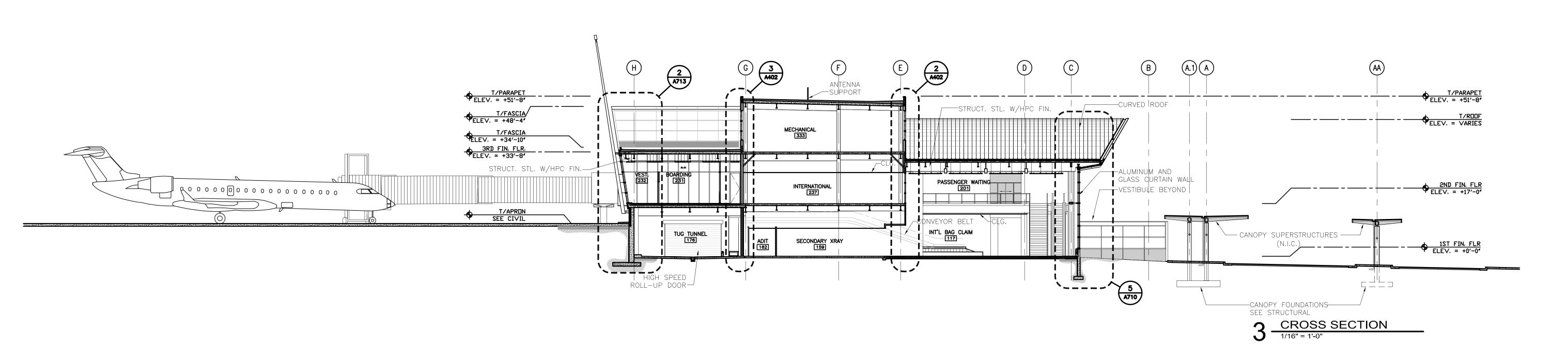
EXTERIOR ELEVATIONS

SHEET NUMBER

A302









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DULUTH, MN

NEW PASSENGER TERMINAL

CONSULTANTS

Interior Architects:

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1	ADDENDUM 1	6.11
	CONFORMANCE SET	7.12
DATE	ISSUED: 07-12-10	•
REVIE	EWED BY: SBS/TC	

DRAWN BY: MKG/MI
DESIGNED BY: SBS/TC

AEP PROJECT NUMBER

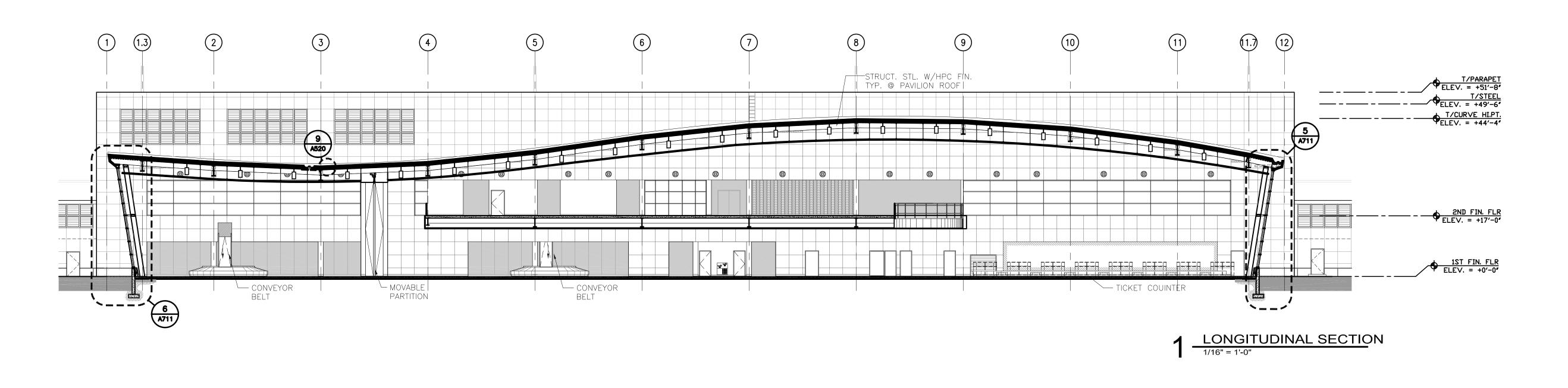
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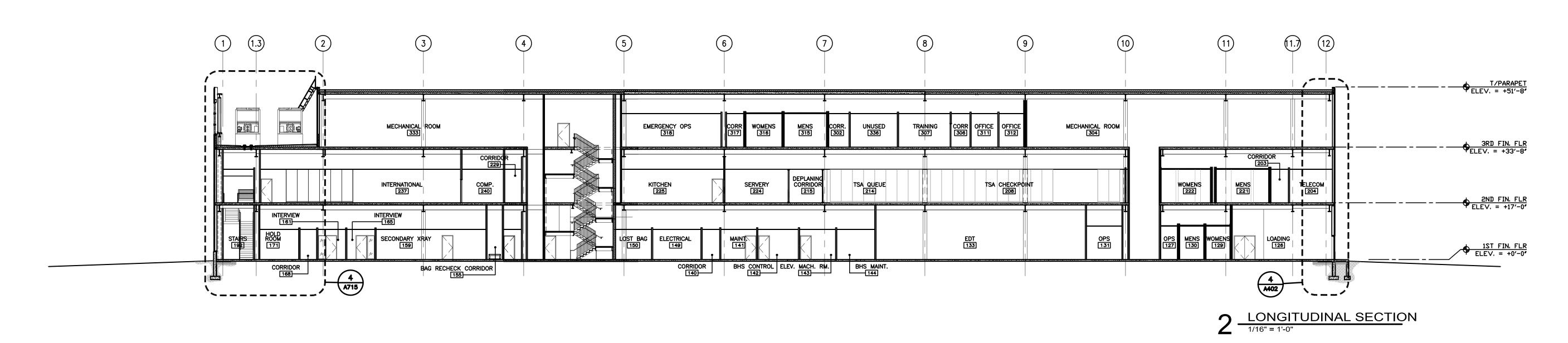
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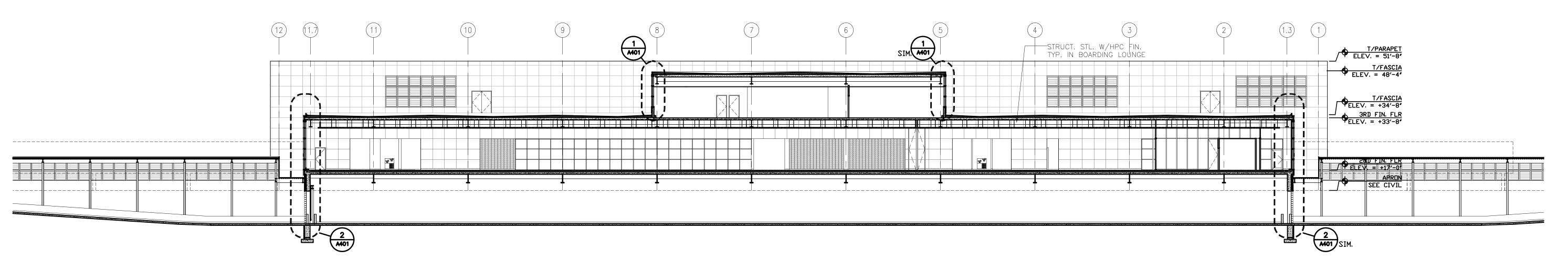
BUILDING SECTIONS

SHEET NUMBER

A310







3 LONGITUDINAL SECTION

1/16" = 1'-0"



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REVIEWED BY: SBS/TC
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DESIGNED BY: SBS/TC

DESIGNED BY: SBS/TC

AEP PROJECT NUMBER

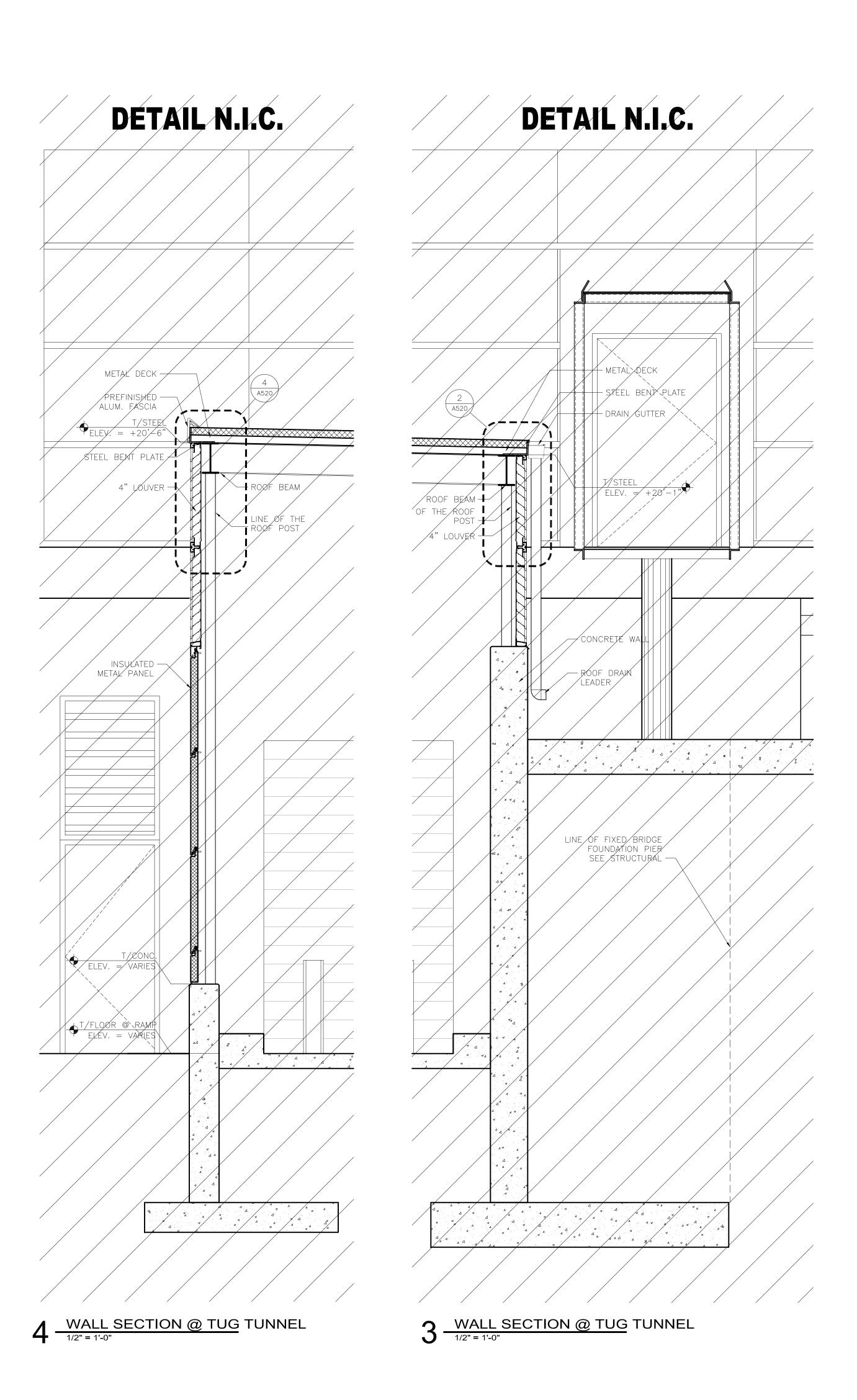
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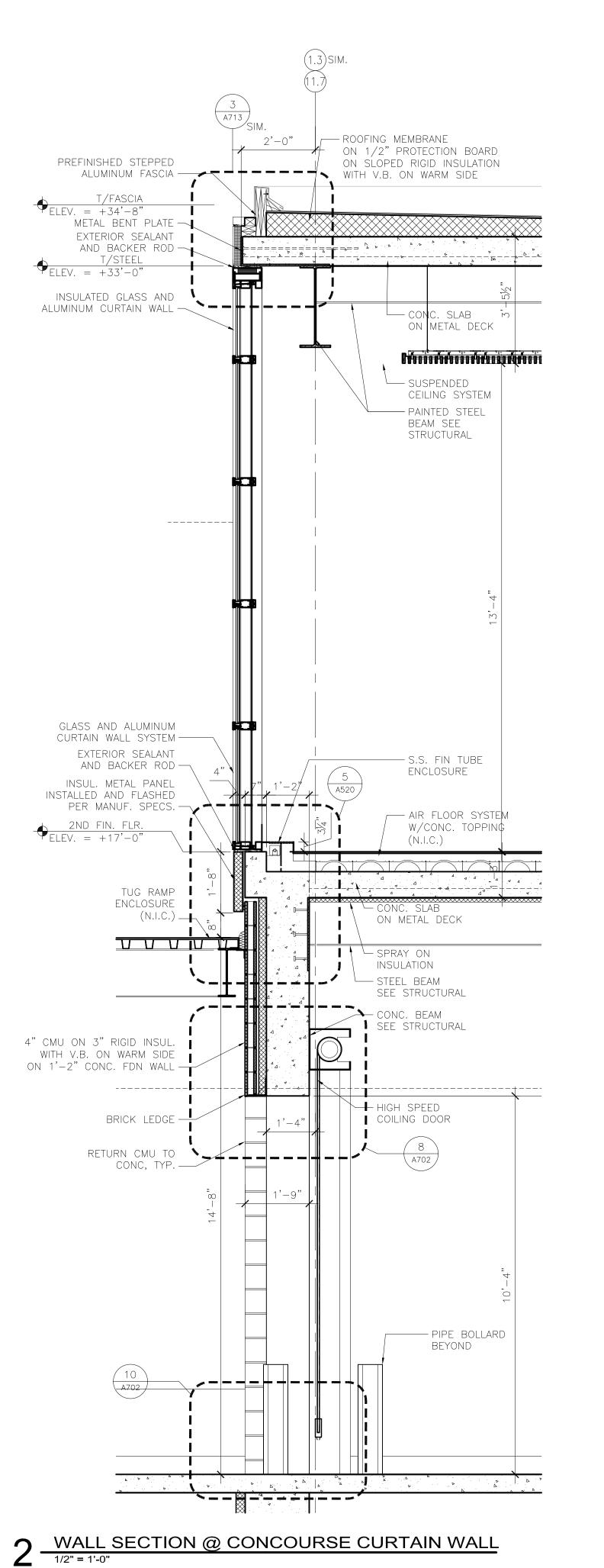
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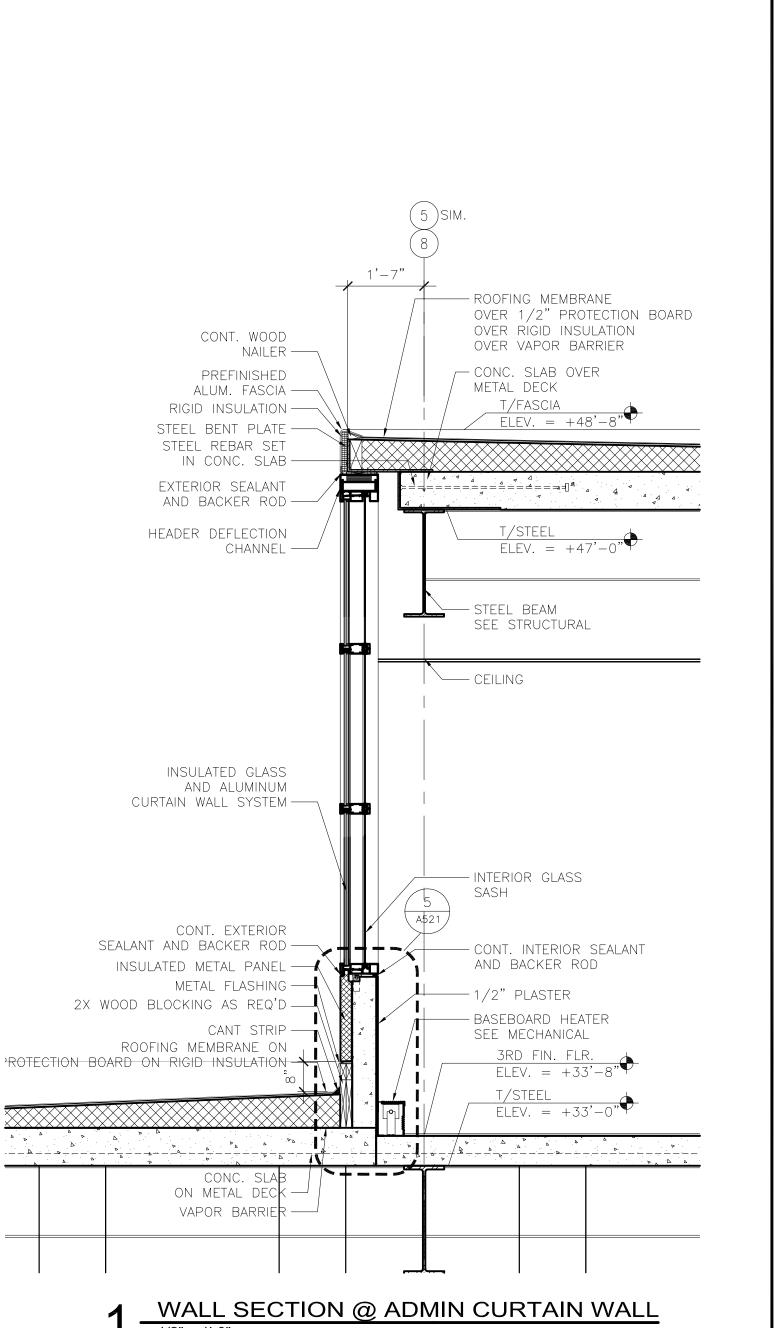
BUILDING SECTIONS

SHEET NUMBER

A311









TERMINAL

CONSULTANTS

Interior Architects:

NEW PASSENGER

SJA ARCHITECTS

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REVIEWED BY: SBS/TC
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AEP PROJECT NUMBER

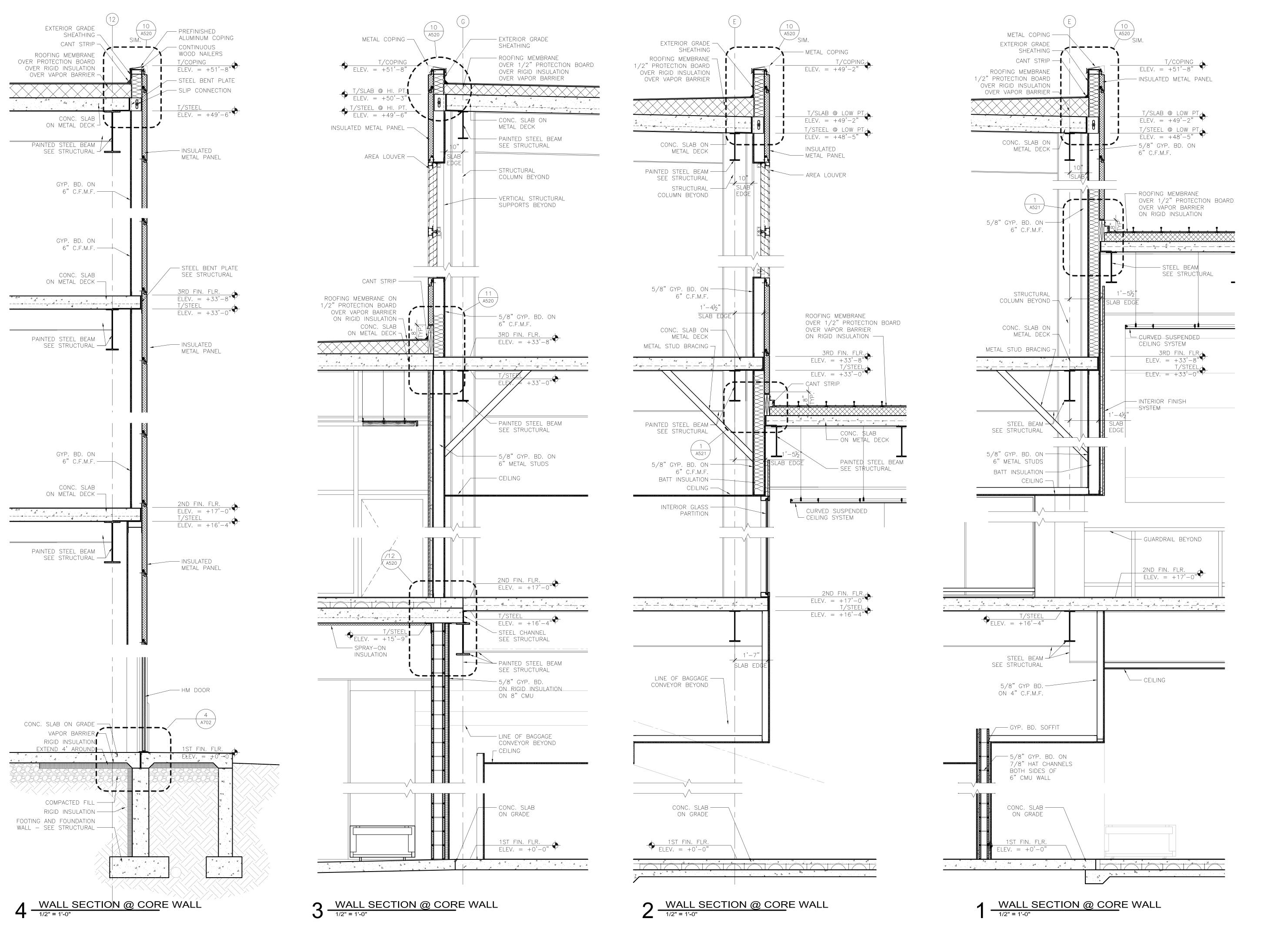
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WALL SECTIONS

A401

SHEET NUMBER



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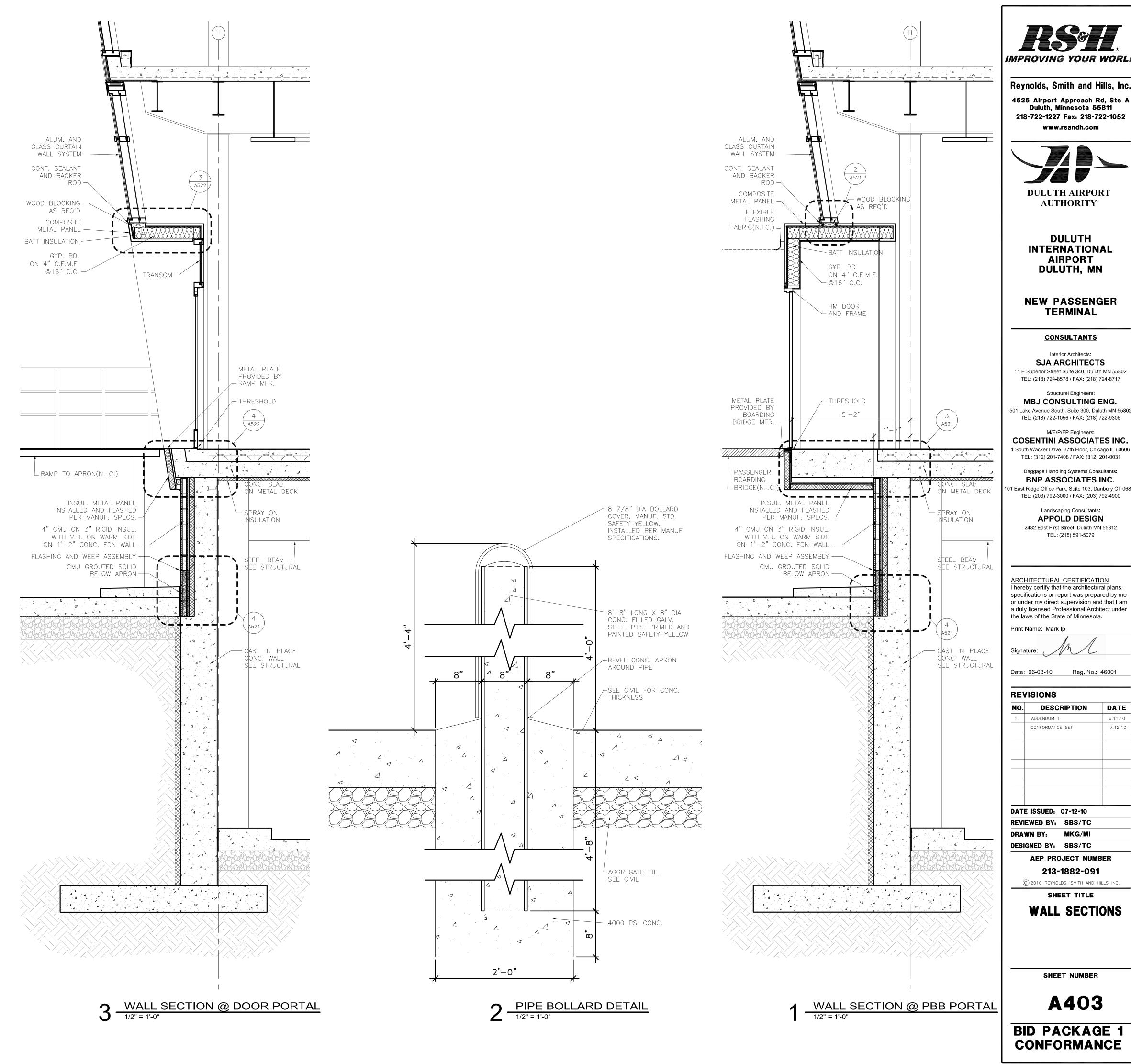
WALL SECTIONS

SHEET NUMBER

A402

BID PACKAGE 1

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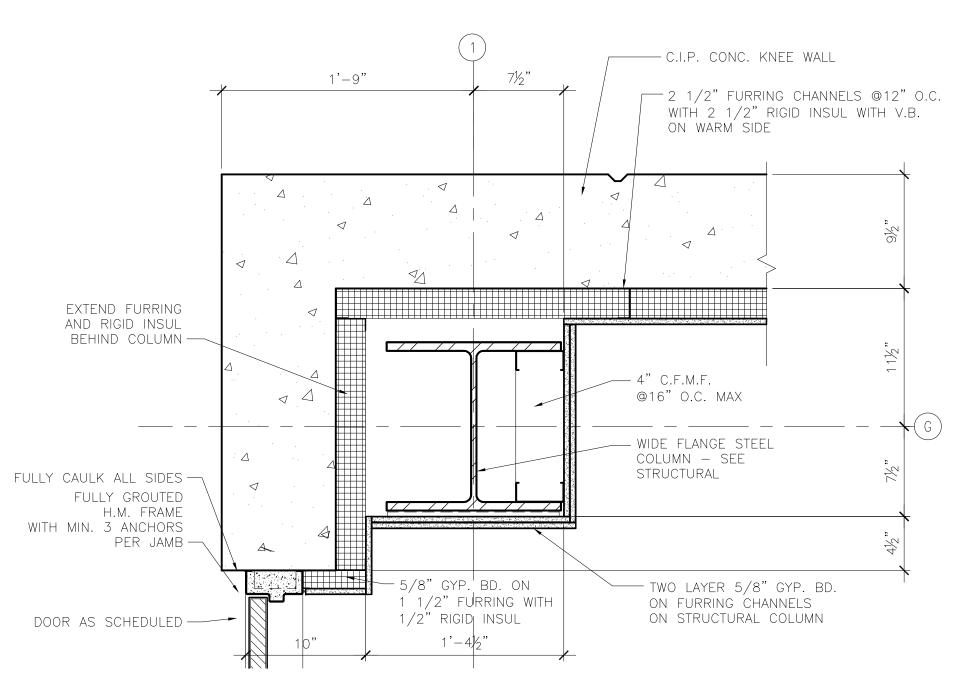
MBJ CONSULTING ENG. 501 Lake Avenue South, Suite 300, Duluth MN 55802

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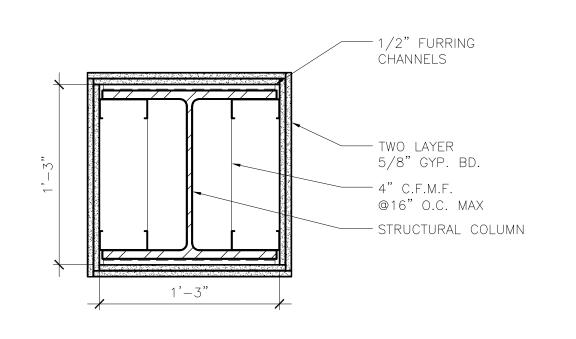
East Ridge Office Park, Suite 103, Danbury CT 06810

DATE 7.12.10

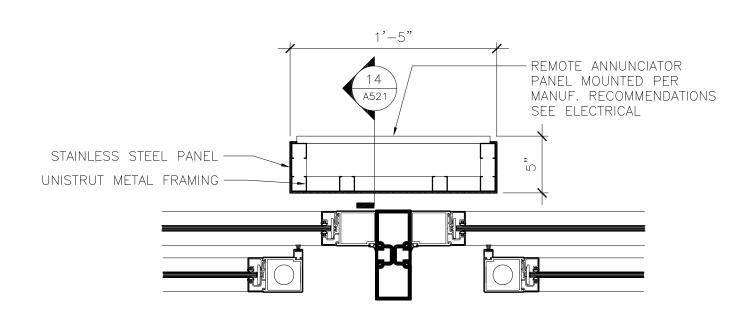
CONFORMANCE



7 DETAIL @ CORE WALL CORNER LOWER



8 TYP. COLUMN WRAP DETAIL 1 1/2" = 1'-0"



5 DETAIL
1 1/2" = 1'-0" — TWO LAYERS OF §" GYP. BD. BOTH SIDES — WIDE FLANGE STEEL COLUMN — SEE STRUCTURAL - 6" METAL COLD FORMED METAL FRAMING @16" O.C. TYP. 8" METAL COLD FORMED METAL FRAMING 3" WALL HUNG WD. VENEER PANEL ON MTL. CLEATS ON INSULATED METAL — PANEL §" GYP. BD. PAINTED BLACK CONTINUOUS — SEALANT | CONTINUOUS SEALANT -LINE OF CONC. KNEE AND BACKER ROD WALL BELOW ALUM. VERTICAL -MULLION - INSULATED GLASS S.S. FIN TUBE -ENCLOSURE HORIZONTAL ALUM. - PRESSURE BAR INTERIOR GLASS SASH-6 DETAIL
1 1/2" = 1'-0"

1'-5"

MFG. STD. ATTACHMENT — CLIP AND ACCESSORIES —

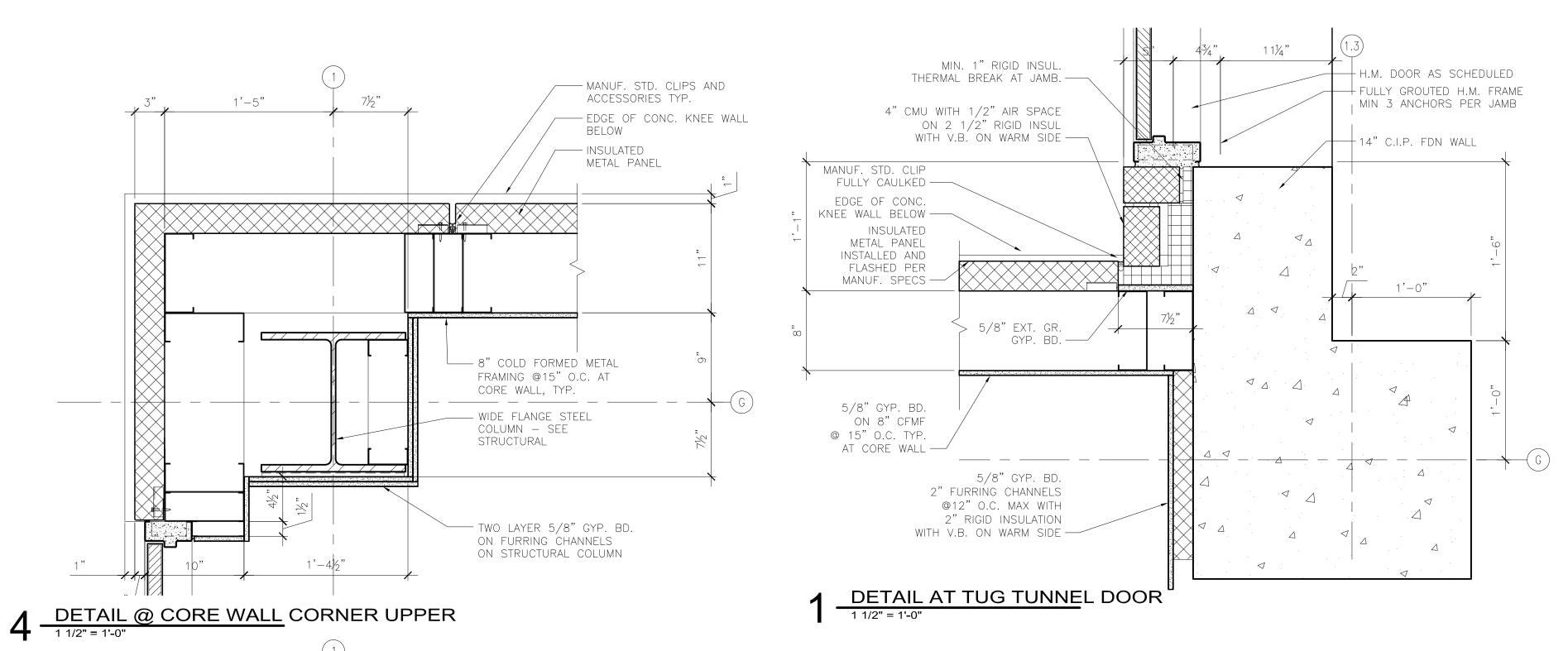
3" INSUL. MTL. PANEL

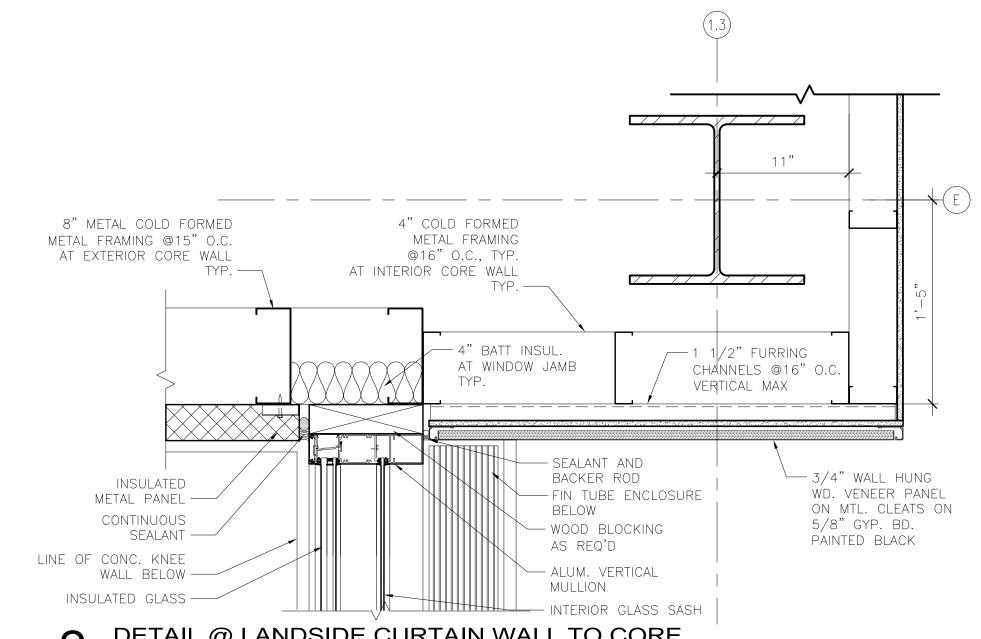
ON 8" COLD FORMED

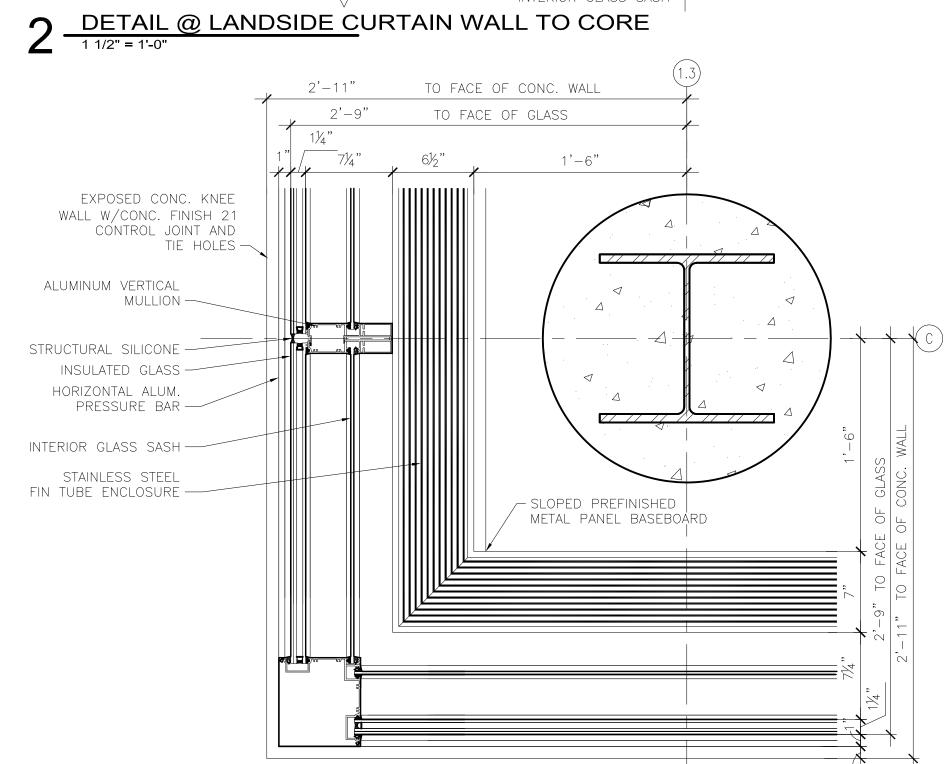
METAL FRAMING

EDGE OF CONC. KNEE WALL BELOW —

@ 15" O.C. —







3 DETAIL @ LANDSIDE CURTAIN WALL CORNER

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Signature:	MM

 Date:
 06-03-10
 Reg. No.:
 46001

 REVISIONS

 NO.
 DESCRIPTION
 DATE

NO. DESCRIPTION

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REVIEWED BY: SBS/TC

DRAWN BY: MKG/MI

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DESIGNED BY: SBS/TC

AEP PROJECT NUMBER

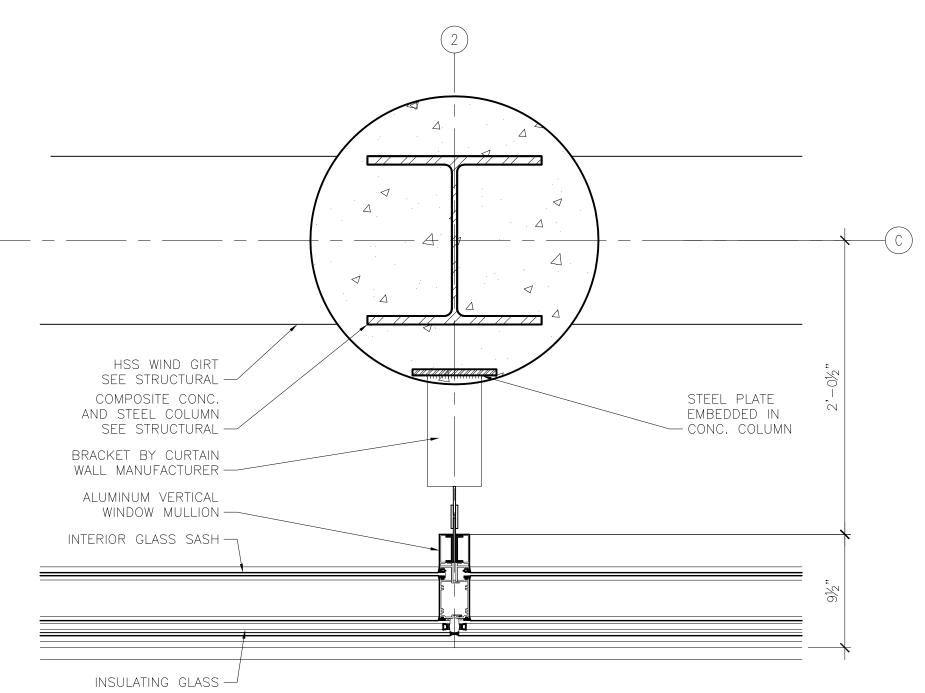
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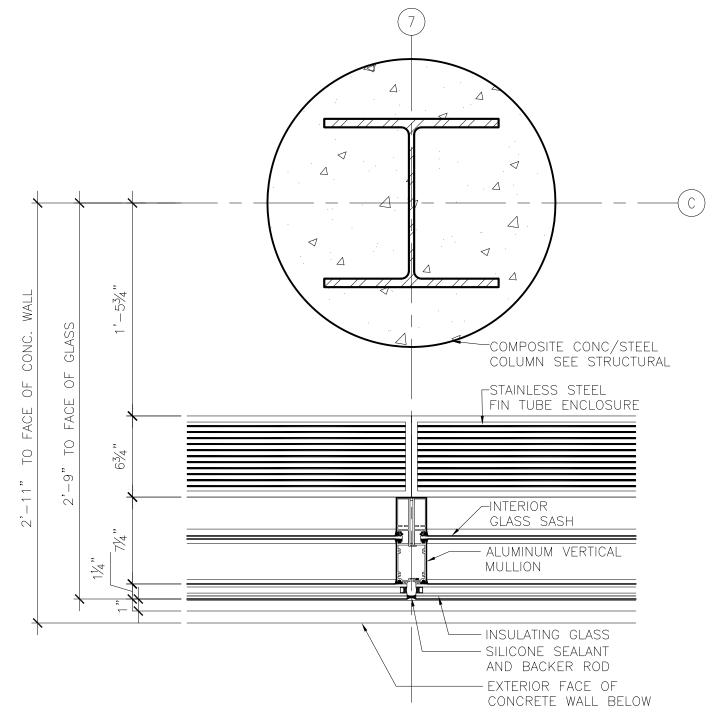
PLAN DETAILS

A510

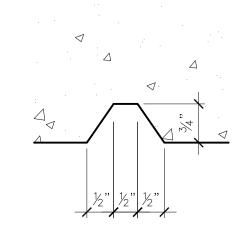
SHEET NUMBER



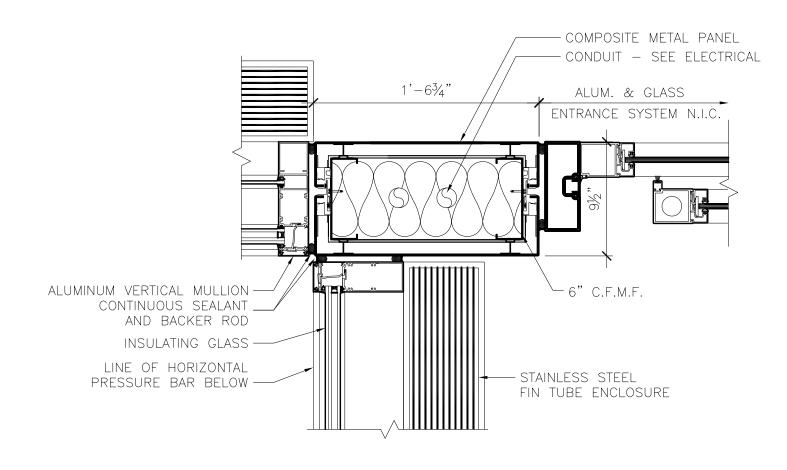
7 PLAN DETAIL - SECOND LEVEL

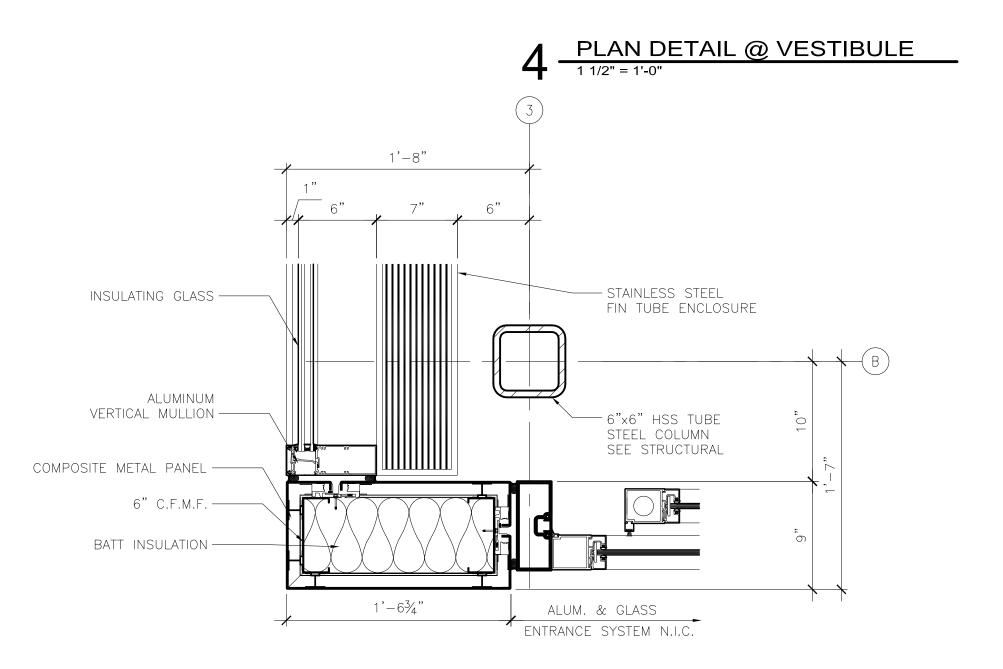


8 PLAN DETAIL - FIRST LEVEL
1 1/2" = 1'-0"

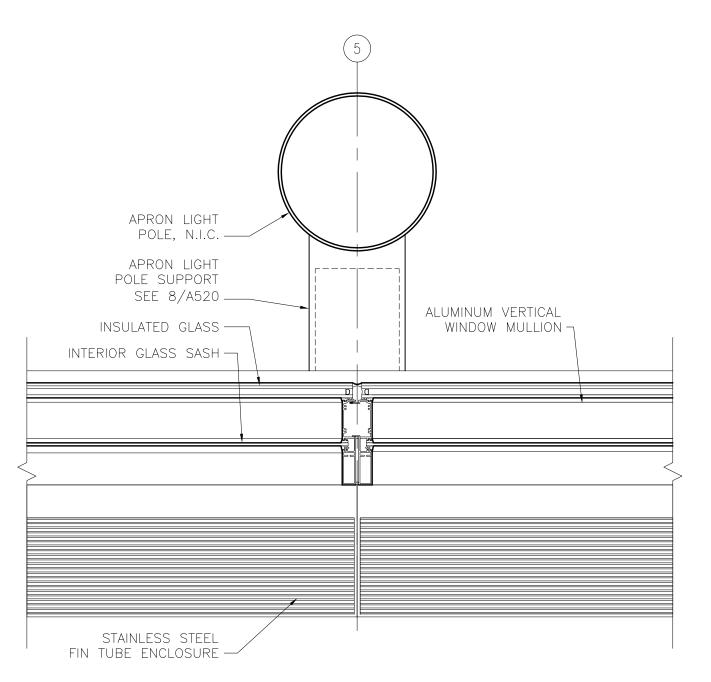


9 TYP. CONCRETE REVEAL DETAIL
6" = 1'-0"

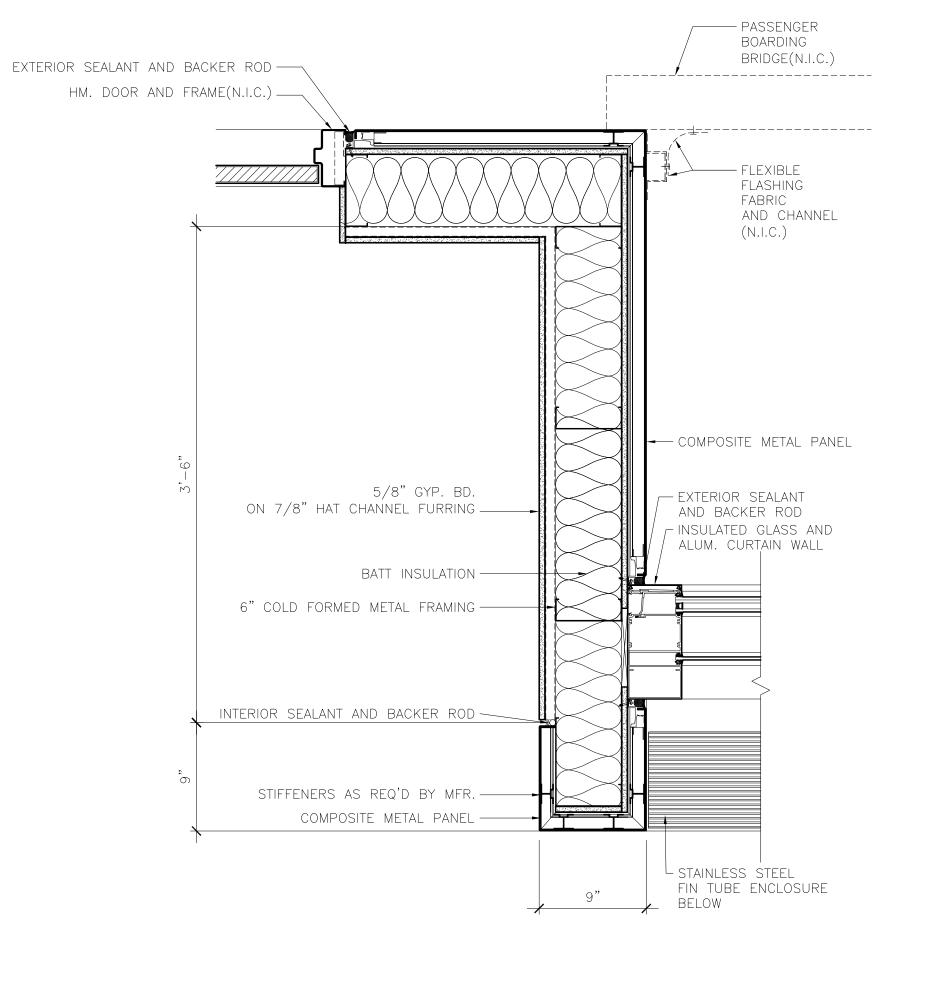




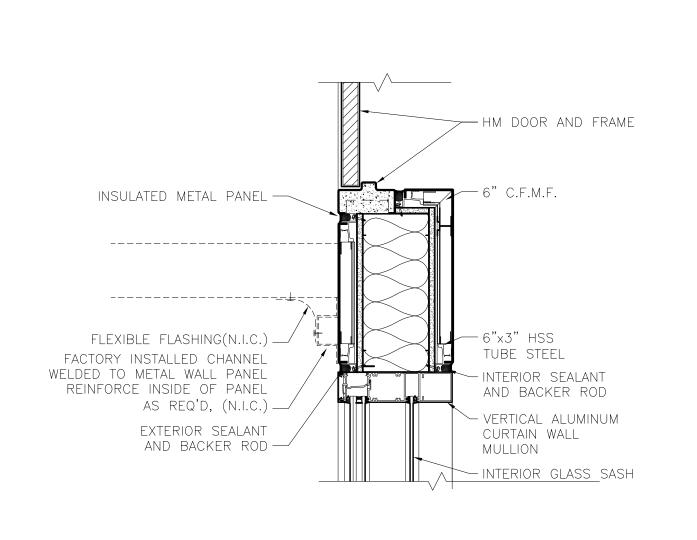
5 PLAN DETAIL @ VESTIBULE 1 1/2" = 1'-0"



6 PLAN DETAIL - SECOND LEVEL
1 1/2" = 1'-0"



PLAN DETAIL @ PBB PORTAL 1 1/2" = 1'-0"



PLAN DETAIL @ FIXED BRIDGE
1 1/2" = 1'-0"

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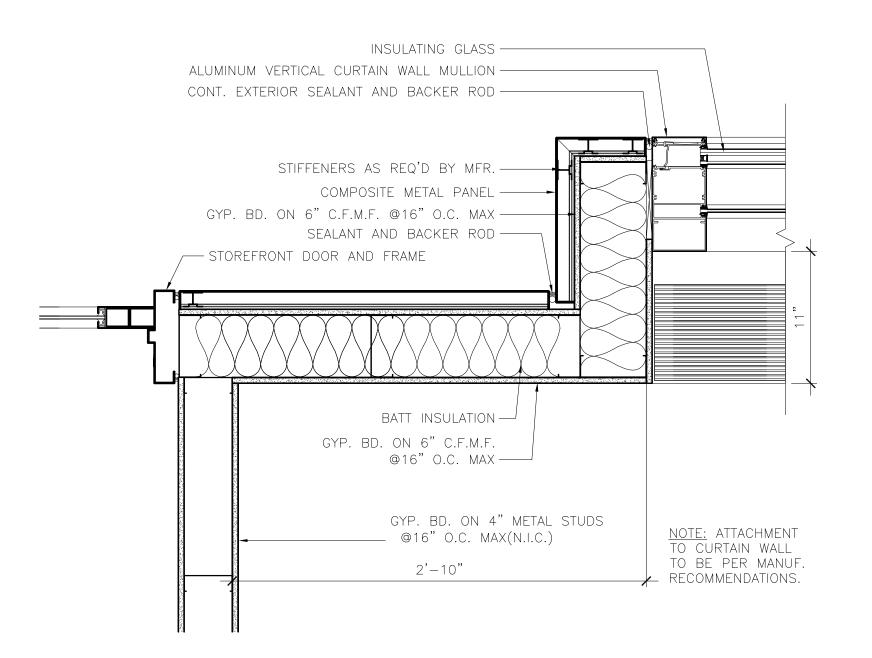
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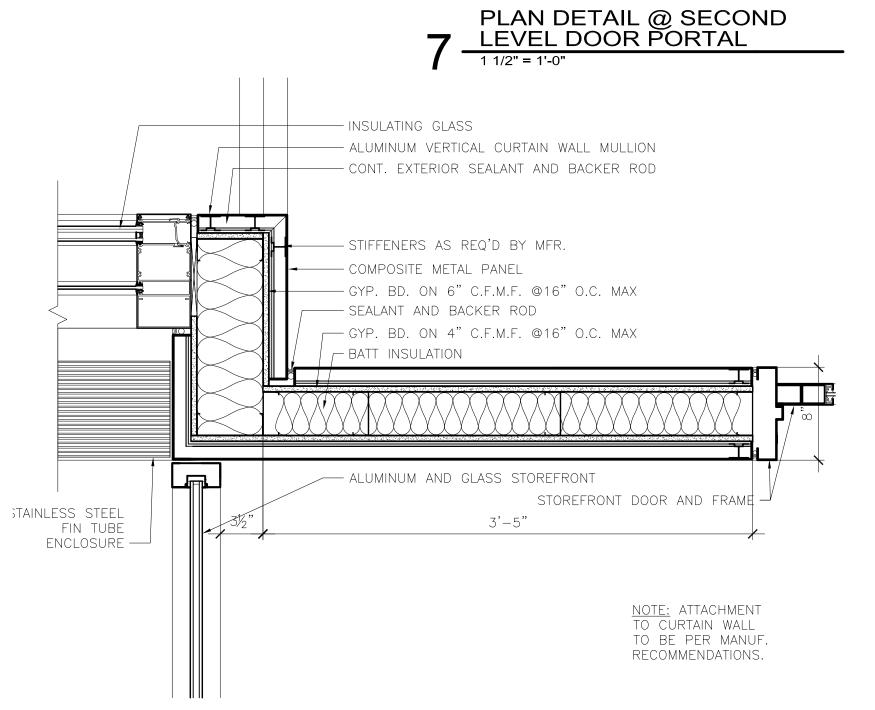
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PLAN DETAILS

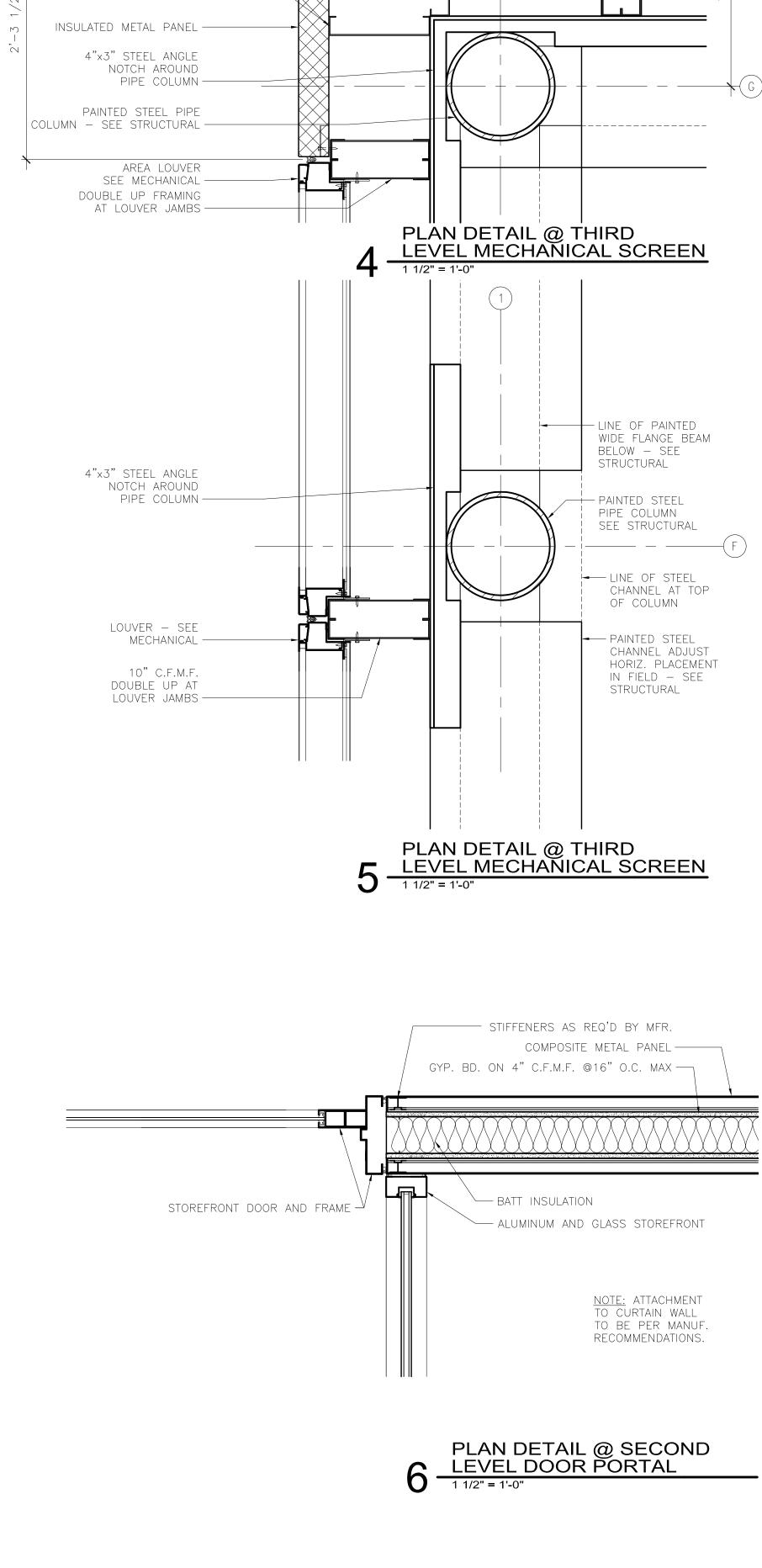
SHEET NUMBER

A511





PLAN DETAIL @ SECOND LEVEL DOOR PORTAL

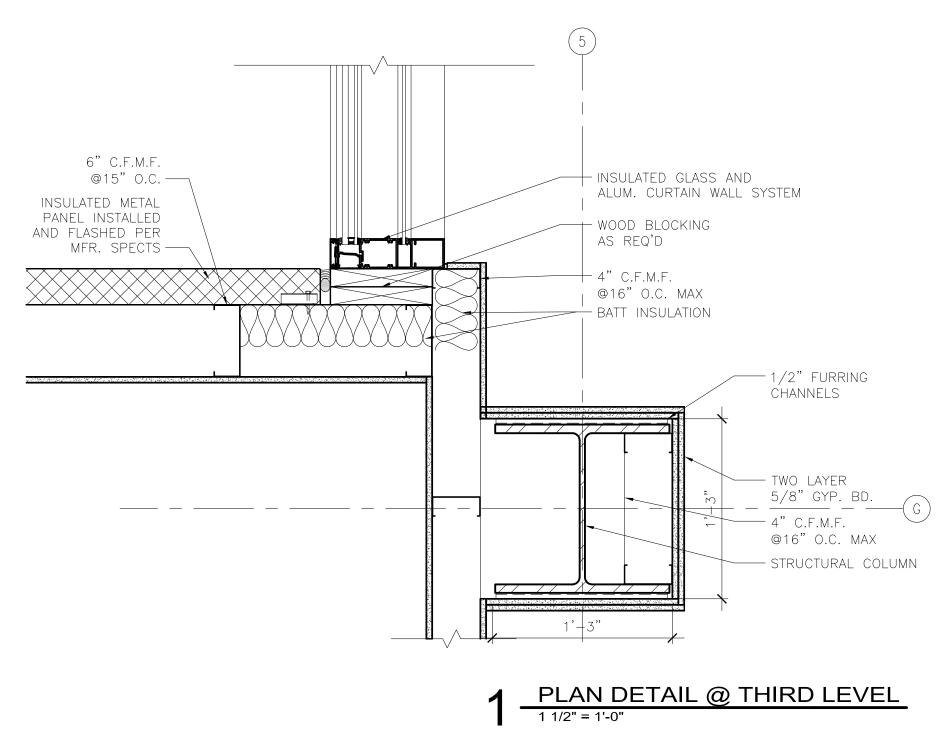


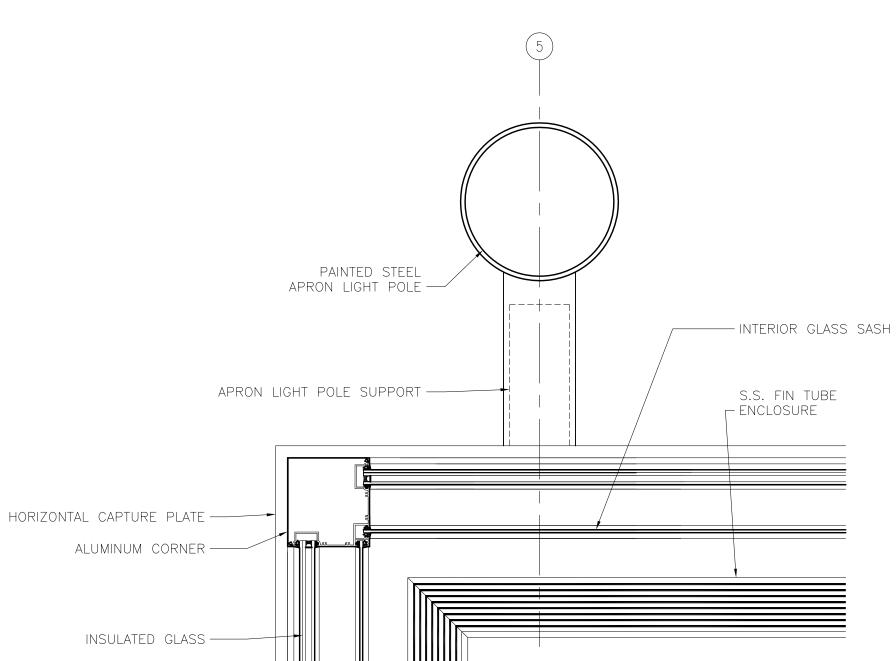
2'-8"

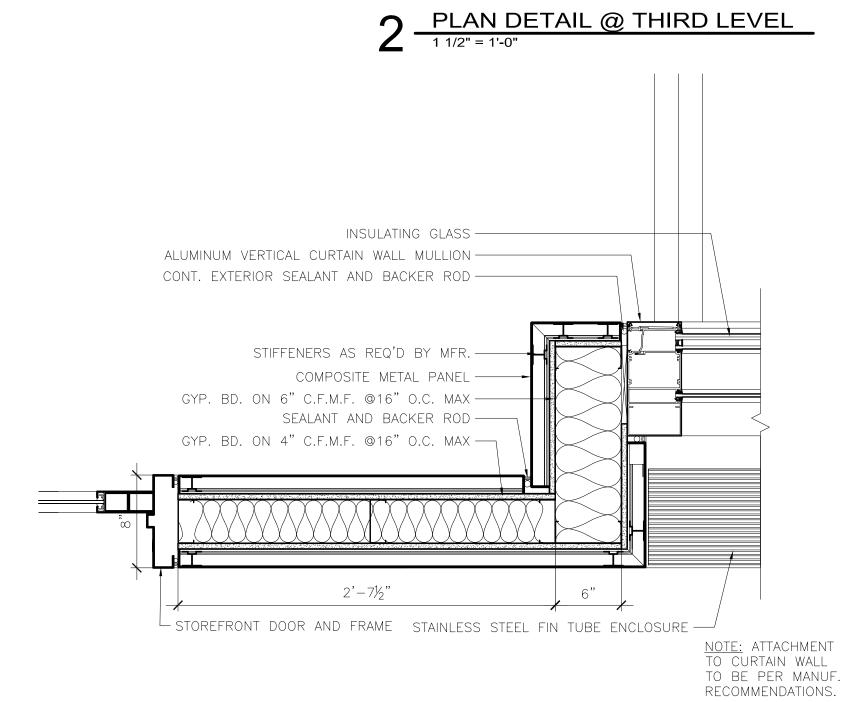
1'-8"

10" C.F.M.F.

@15" O.C. TYP —







PLAN DETAIL @ SECOND LEVEL DOOR PORTAL

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REVISIONS NO. DESCRIPTION DATE ADDENDUM 1 7.12.10 CONFORMANCE SET **DATE ISSUED: 07-12-10** REVIEWED BY: SBS/TC DRAWN BY: MKG/MI

DESIGNED BY: SBS/TC AEP PROJECT NUMBER

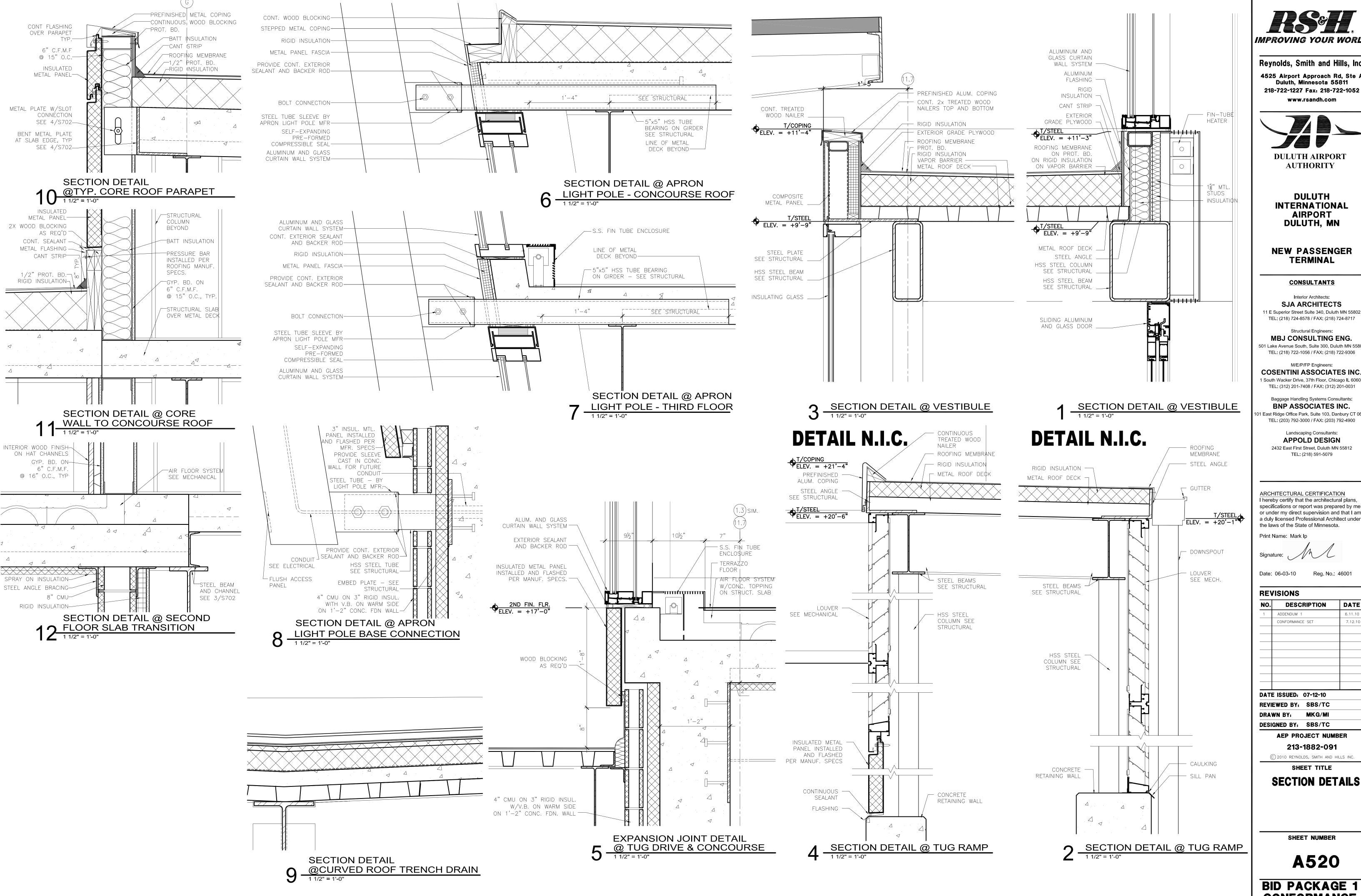
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PLAN DETAILS

A512

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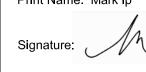
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Reg. No.: 46001

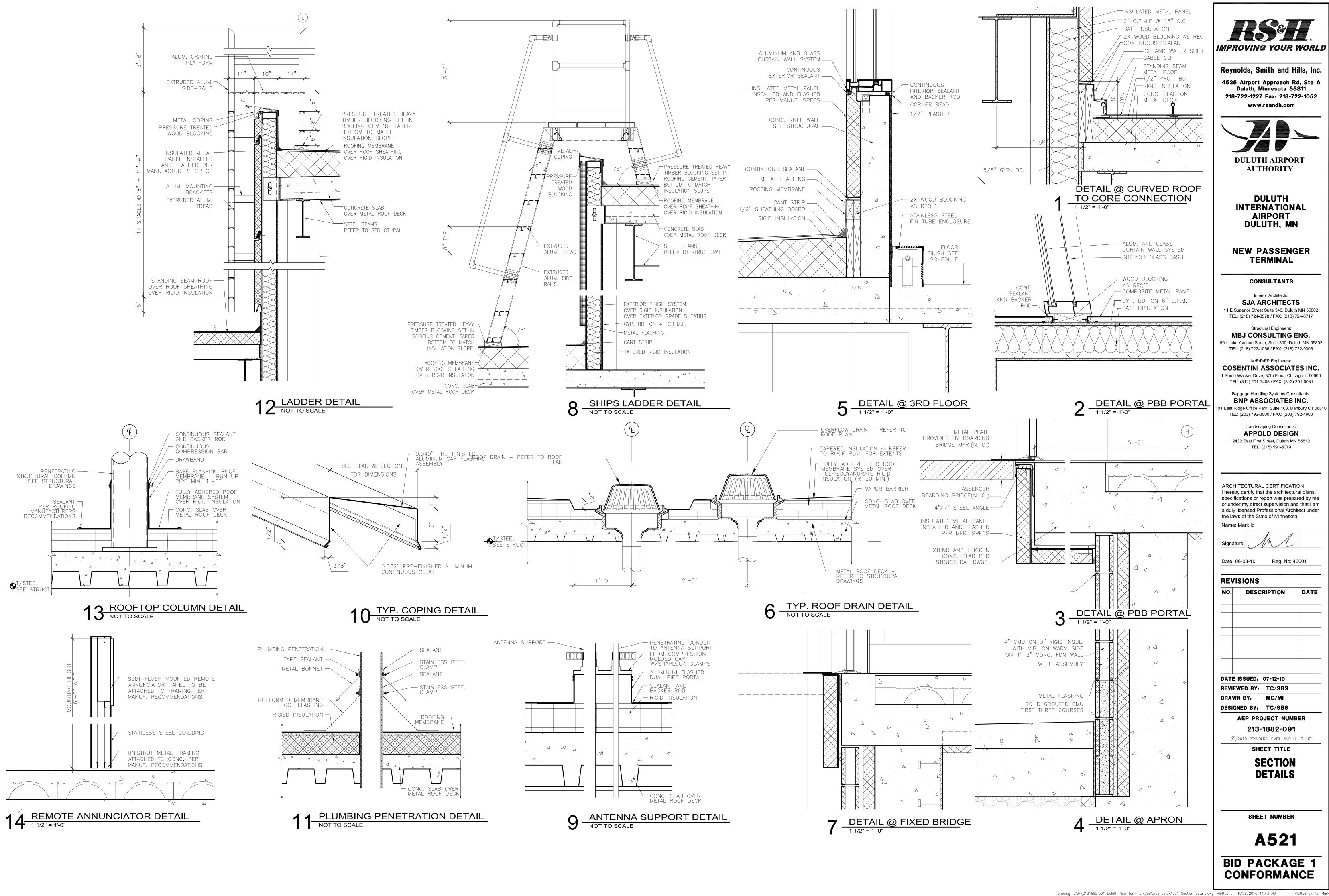
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NO.	DESCRIPTIO	N DATE
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	CONFORMANCE SET	7.12.10
DATE	ISSUED: 07-12-1	0
REVI	EWED BY: SBS/	тс
DRA	WN BY: MKG/	MI
DESI	GNED BY: SBS/	тс
	AEP PROJECT	NUMBER
	213-1882-	.001

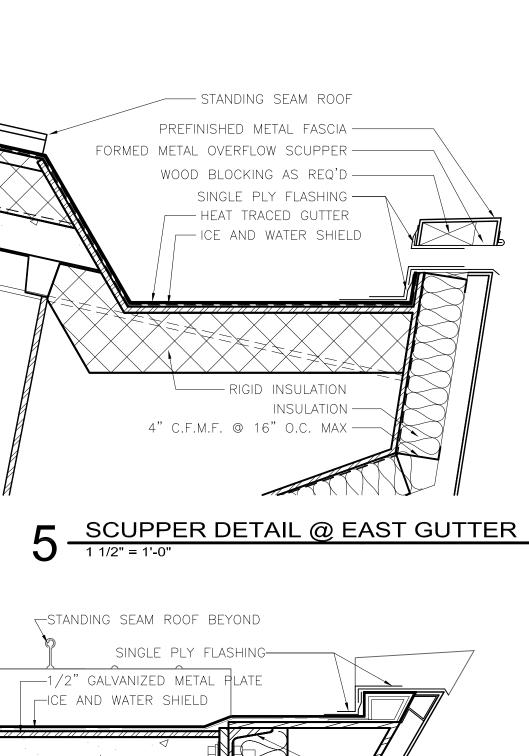
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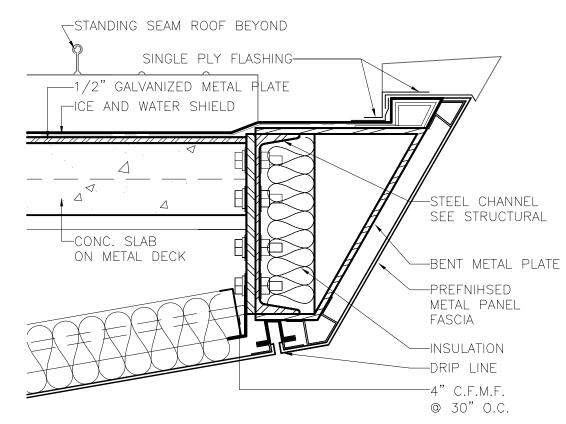
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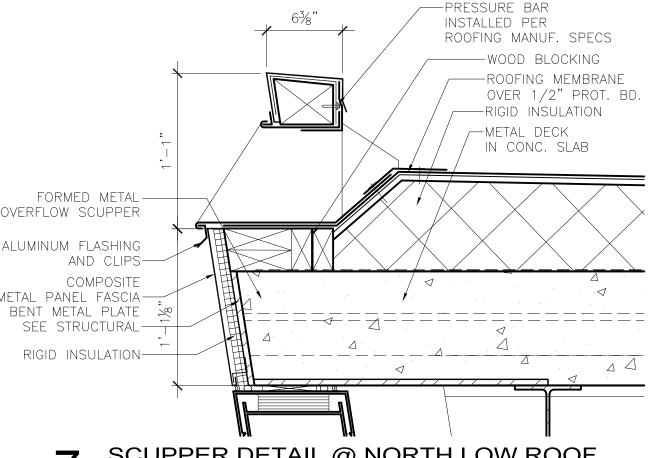


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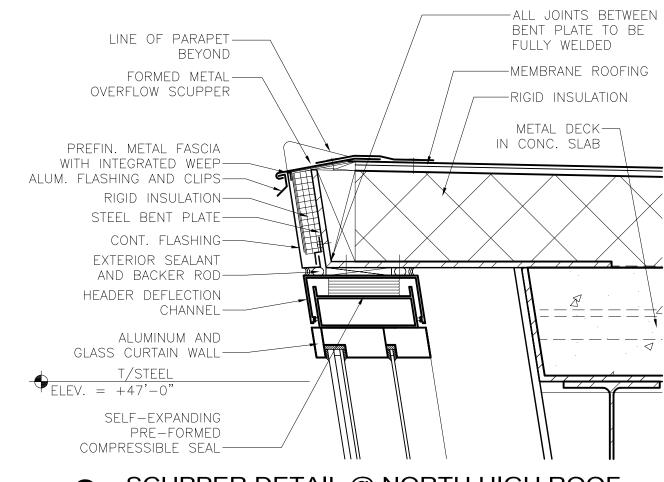




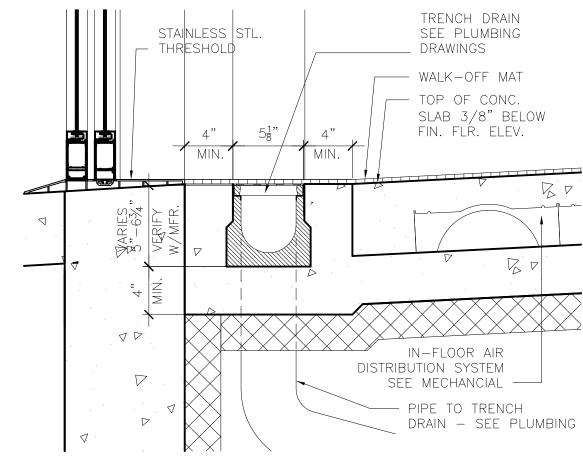
6 SCUPPER DETAIL @ SOUTH GUTTER 1 1/2" = 1'-0"



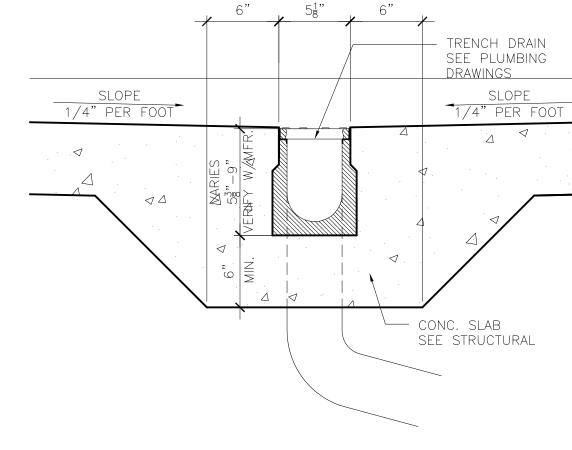
7 SCUPPER DETAIL @ NORTH LOW ROOF



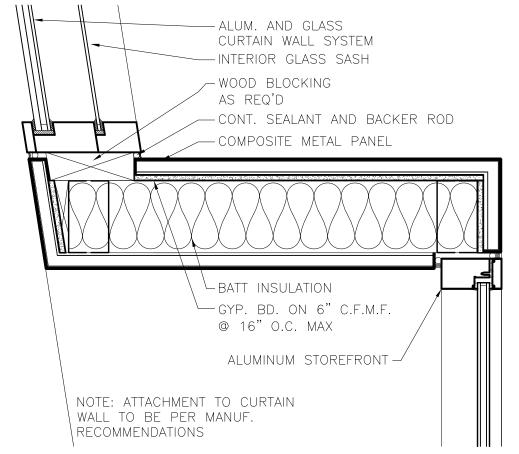
SCUPPER DETAIL @ NORTH HIGH ROOF



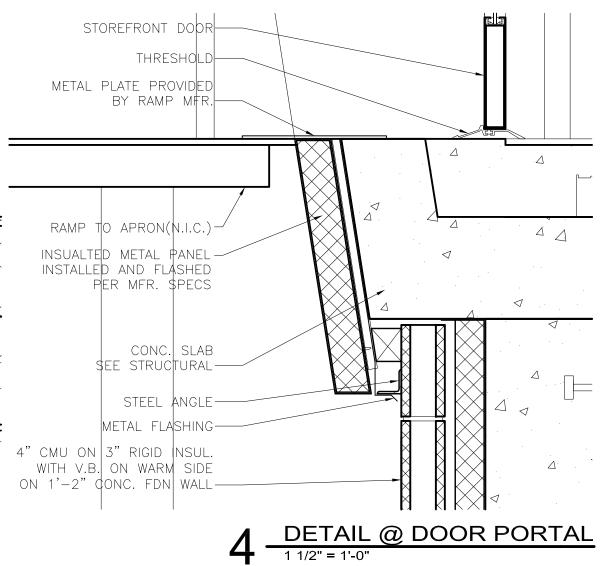
DETAIL @ VESTIBULE TRENCH DRAIN



2 DETAIL @ TUG TUNNEL TRENCH DRAIN 1 1/2" = 1'-0"



DETAIL @ DOOR PORTAL





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DULUTH AIRPORT AUTHORITY

DULUTH INTERNATIONAL AIRPORT DULUTH, MN

NEW PASSENGER TERMINAL

CONSULTANTS Interior Architects:

SJA ARCHITECTS 11 E Superior Street Suite 340, Duluth MN 55802 TEL: (218) 724-8578 / FAX: (218) 724-8717

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TEL: (203) 792-3000 / FAX: (203) 792-4900 Landscaping Consultants:

APPOLD DESIGN 2432 East First Street, Duluth MN 55812 TEL: (218) 591-5079

ARCHITECTURAL CERTIFICATION I hereby certify that the architectural plans, specifications or report was prepared by me

or under my direct supervision and that I am a duly licensed Professional Architect under the laws of the State of Minnesota

Name: Mark Ip

Signature: Date: 06-03-10 Reg. No: 46001

REVISIONS

NO.	DESCRIPTION	DAT
DATE	SSUED: 07-12-10	
REVIEV	VED BY: TC/SBS	
DRAW	BY: MG/MI	
DESIGN	IED BY: TC/SBS	

AEP PROJECT NUMBER

213-1882-091

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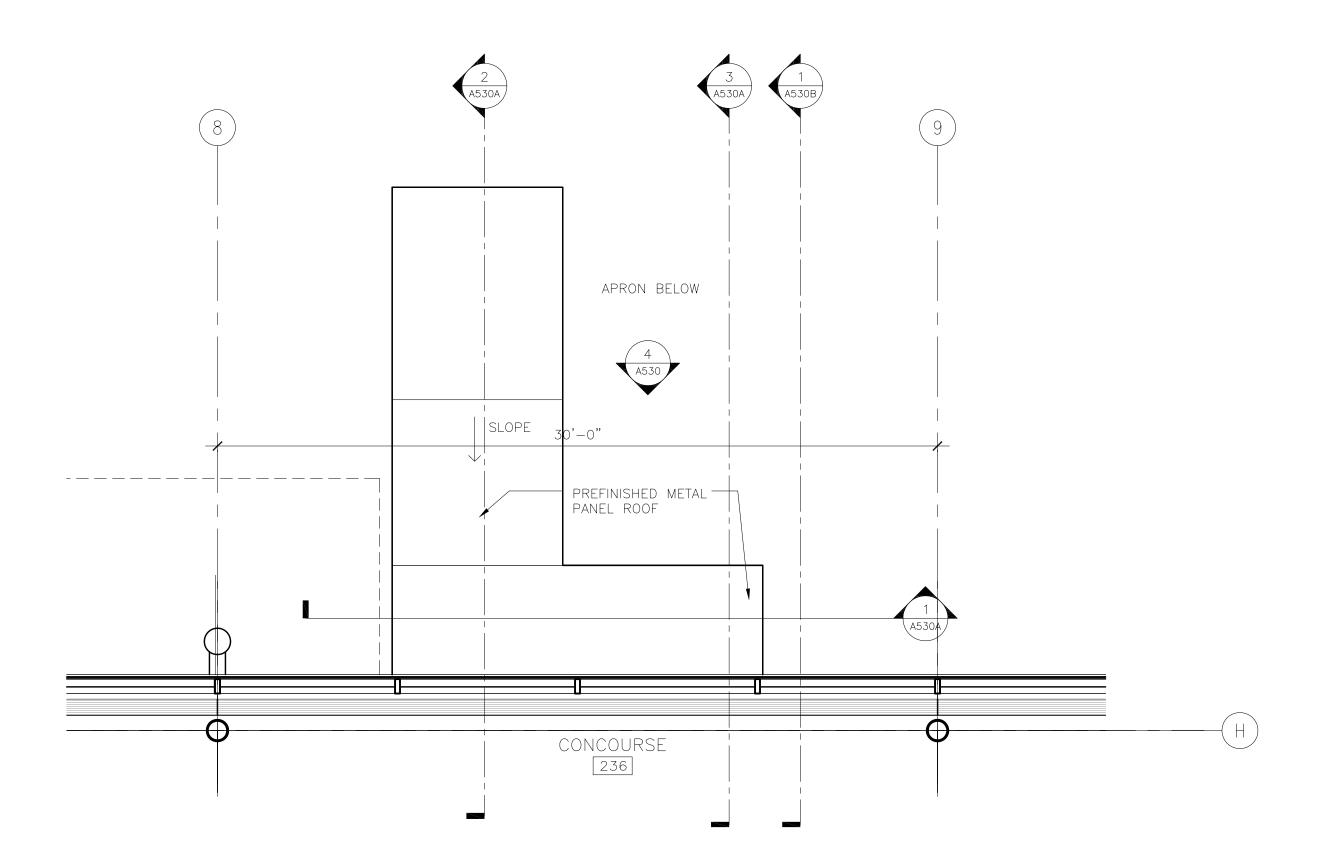
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SHEET NUMBER

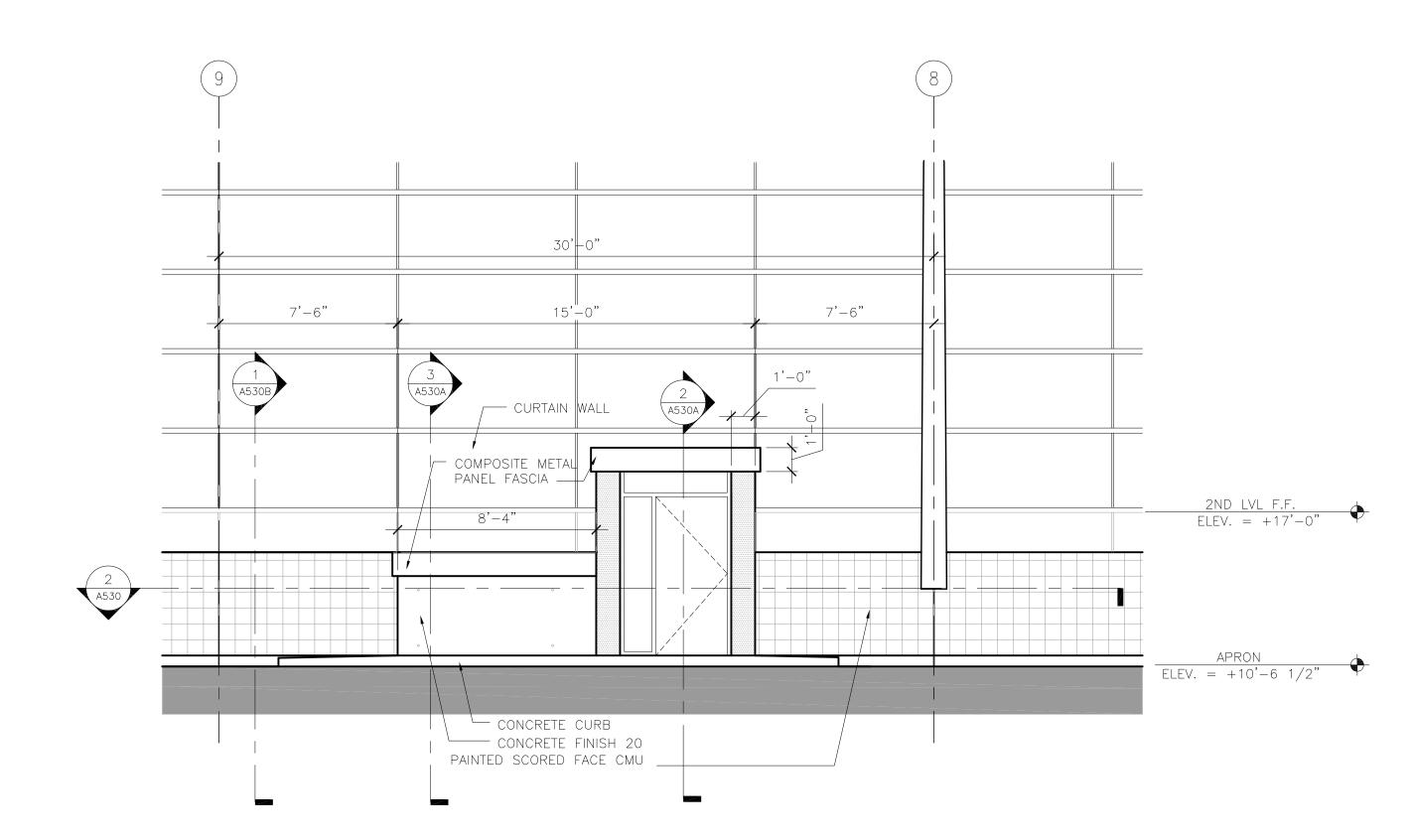
A522

BID PACKAGE 1 CONFORMANCE

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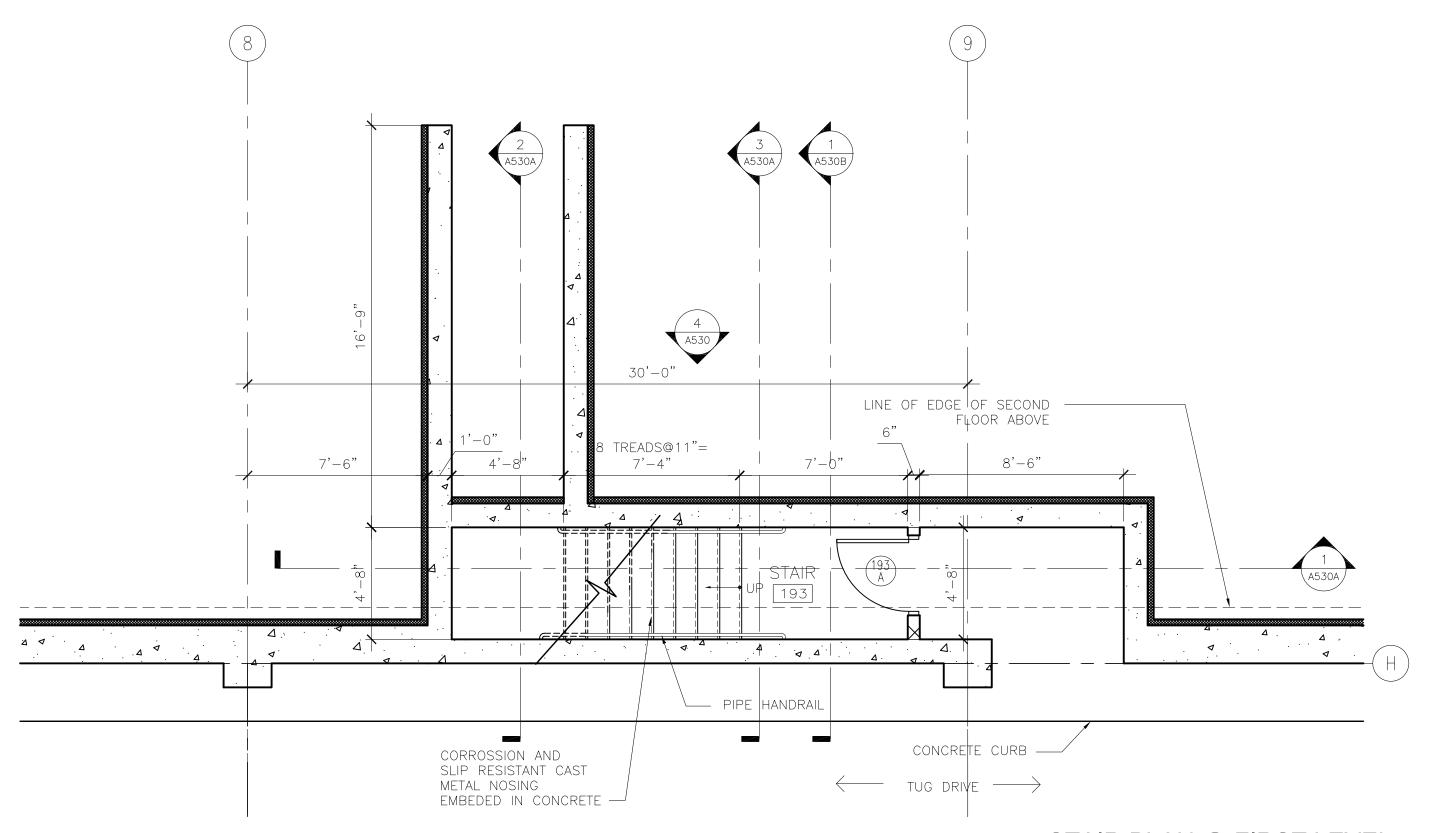


3 SECOND LEVEL PARTIAL FLOOR PLAN AND STAIR ROOF PLAN 1/4" = 1'-0"

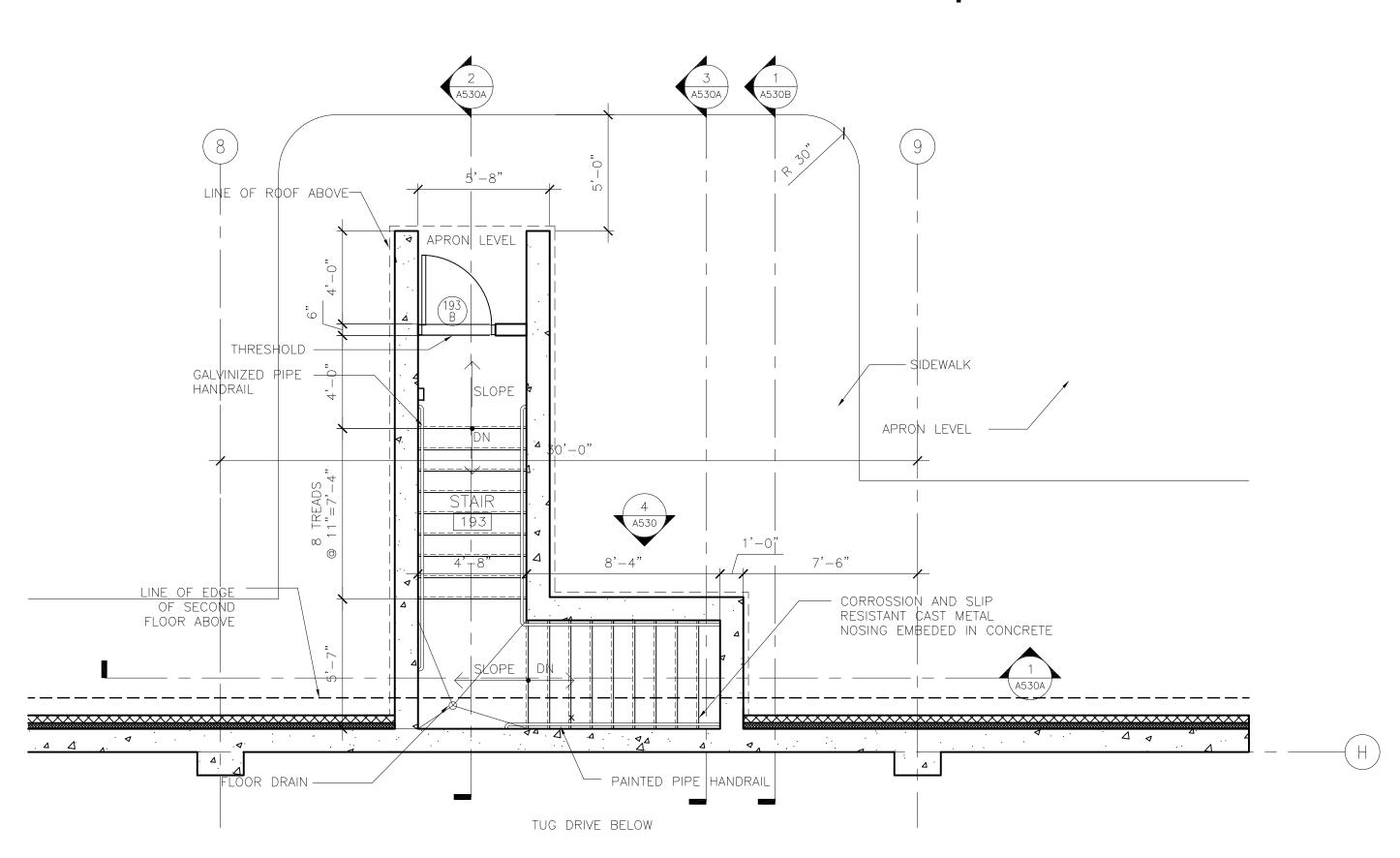


4 PARTIAL NORTH ELEVATION

1/4" = 1'-0"



1 STAIR PLAN @ FIRST LEVEL



2 STAIR PLAN @ APRON LEVEL



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Signature:

Date: 06-03-10 Reg. No.: 46001

REVISIONS

NO.	DESCRIPTION	DAT
1	ADDENDUM 1	6.11.1
	CONFORMANCE SET	7.12.1

DRAWN BY: MK
DESIGNED BY: SBS

AEP PROJECT NUMBER

REVIEWED BY: TC

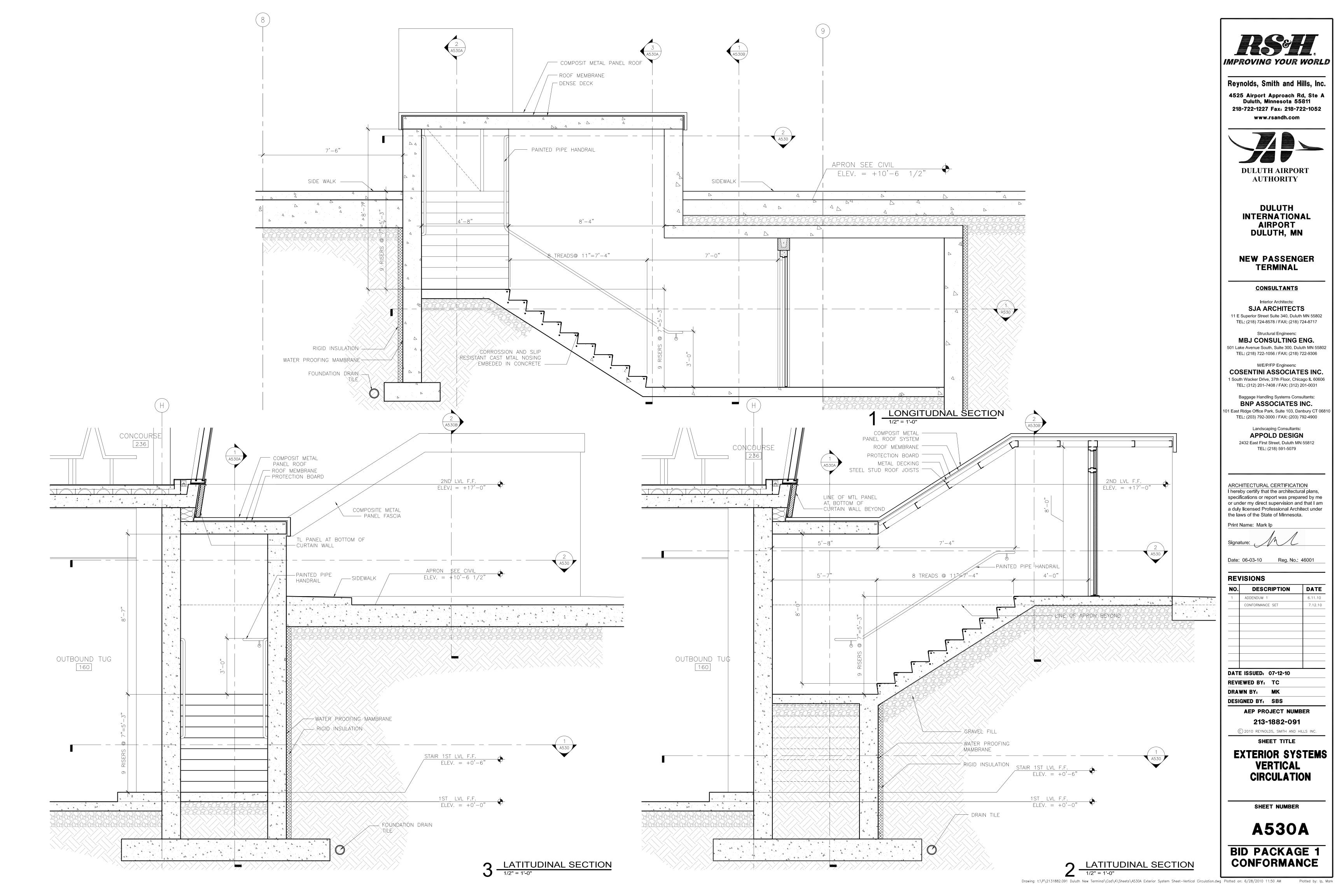
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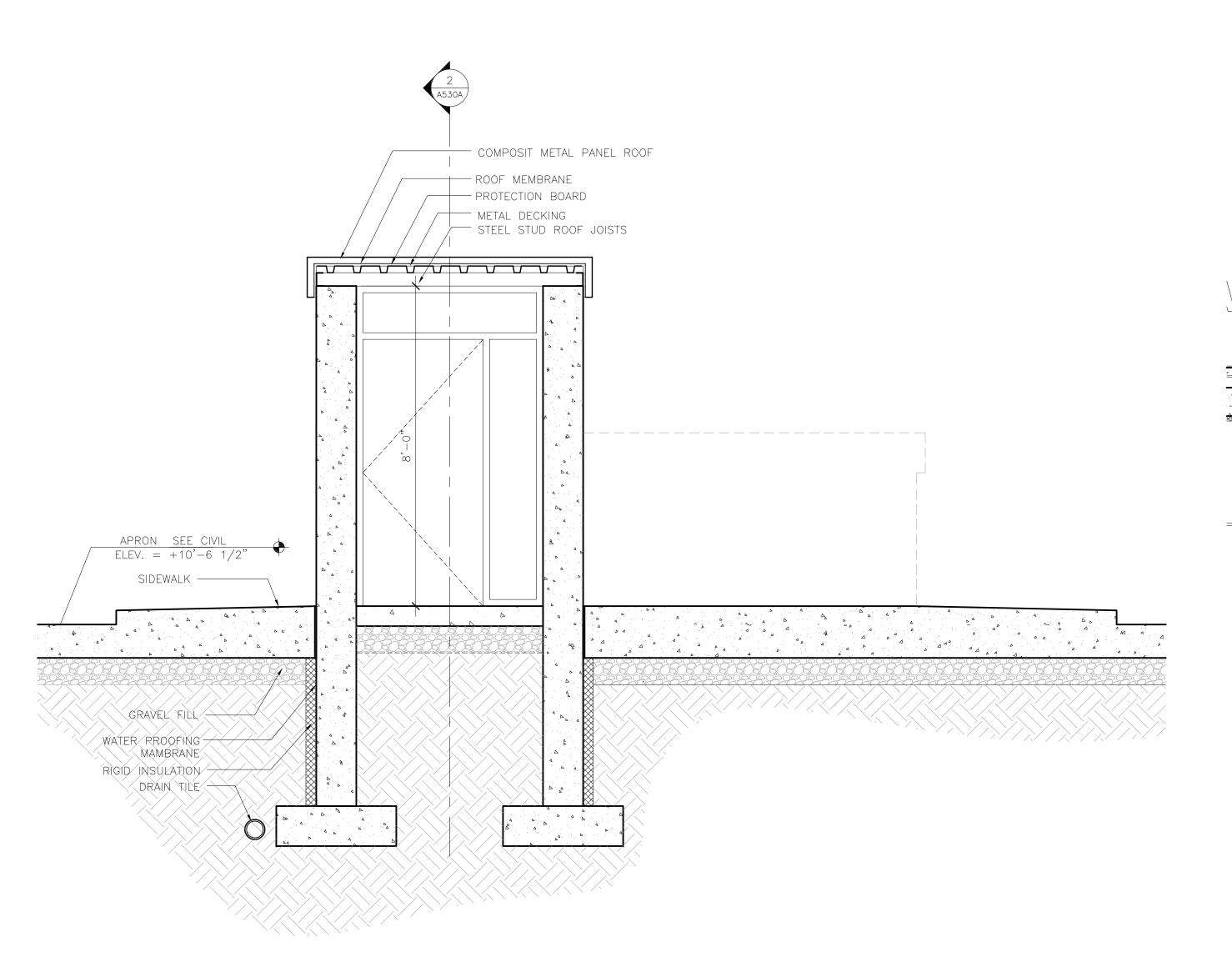
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EXTERIOR SYSTEMS
VERTICAL
CIRCULATION

SHEET NUMBER

A530





2ND LVL F.F. ELEV. = +17'-0"ELEV. = +10'-61/2" 4'-8" — GRAVEL FILL - WATER PROOFING MAMBRANE - RIGID INSULATION STAIR LVL F.F.

ELEV. = +0'-6" DRAIN TILE LATITUDINAL SECTION

1/2" = 1'-0"

2 LONGITUDNAL SECTION

1/2" = 1'-0"

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REVISIONS

DESCRIPTION	DA	
ADDENDUM 1	6.1	
CONFORMANCE SET	7.1	
E ISSUED: 07-12-10		
	ADDENDUM 1 CONFORMANCE SET	

DATE ISSUED: 07-12-REVIEWED BY: TC

DRAWN BY: MK
DESIGNED BY: SBS

AEP PROJECT NUMBER

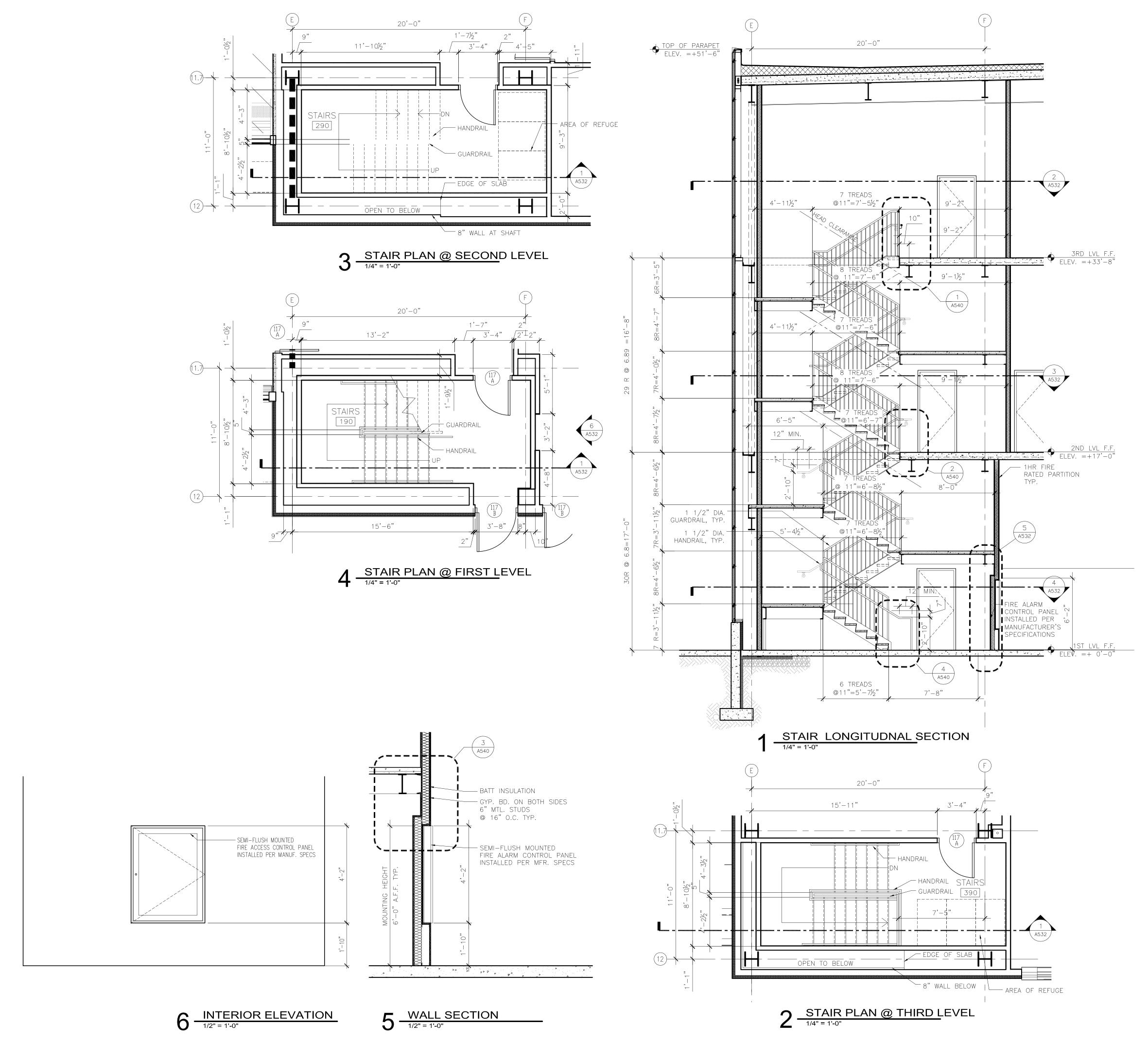
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EXTERIOR SYSTEMS
VERTICAL
CIRCULATION

SHEET NUMBER

A530B



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Date: 06-03-10 Reg. No.: 46001

REVISIONS

NO.	DESCRIPTION	DA.
1	ADDENDUM 1	6.11
	CONFORMANCE SET	7.12

DATE ISSUED: 07-12-10
REVIEWED BY: TC

DRAWN BY: MK/MIP
DESIGNED BY: TC/SBS

AEP PROJECT NUMBER

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INTERIOR SYSTEMS
VERTICAL

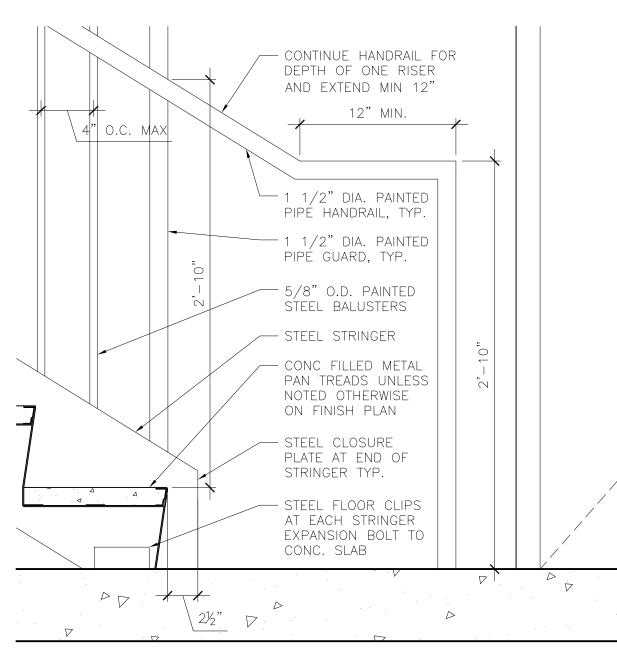
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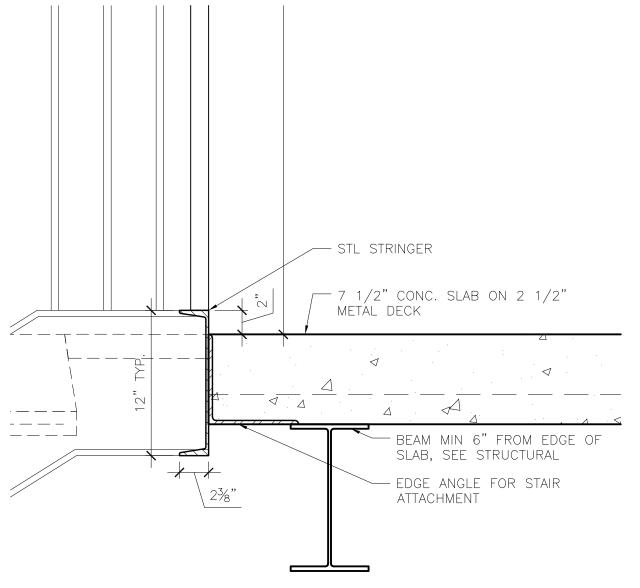
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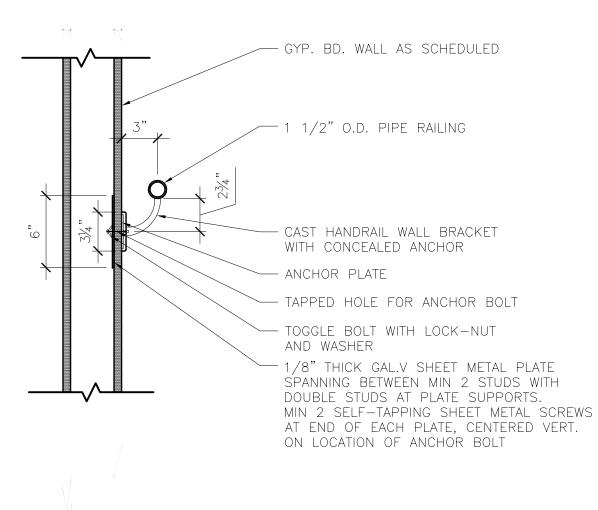
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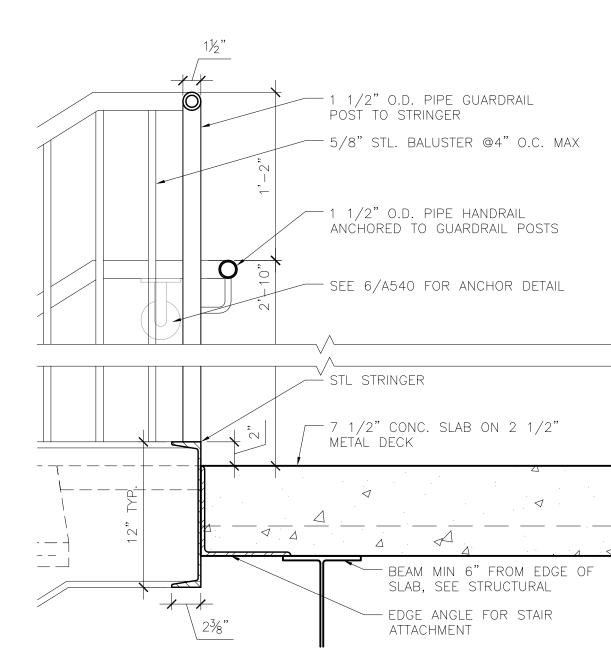
4 STAIR STRINGER @ FIRST LEVEL



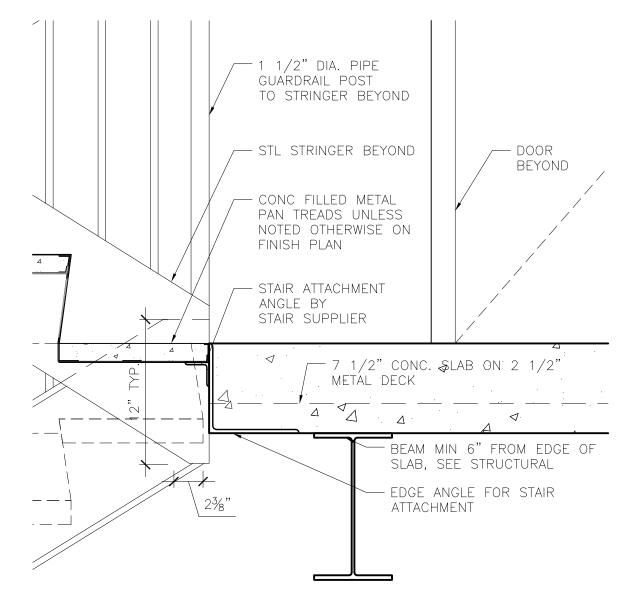
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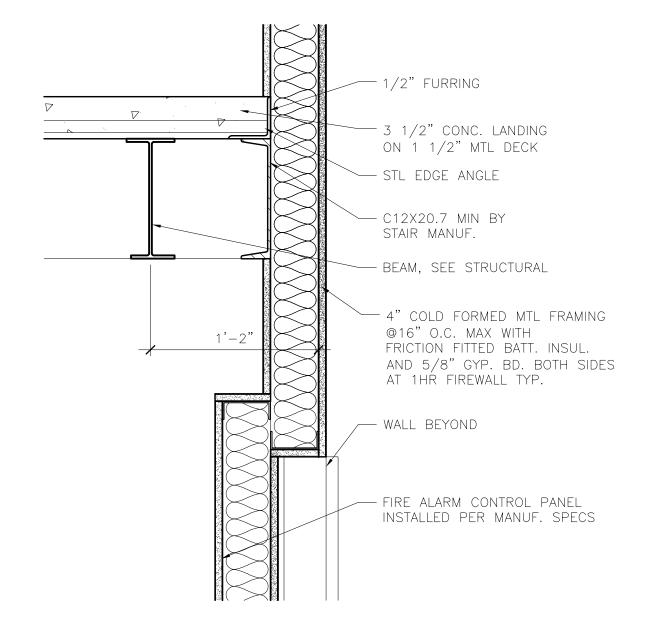
6 HANDRAIL DETAIL AT GYP. BD.



DETAIL AT TOP LANDING



2 DETAIL AT INTERMEDIATE LANDING 1 1/2" = 1'-0"



3 DETAIL AT FIRE ALARM ALCOVE

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Signature:

Date: 06-03-10 Reg. No.: 460

REVISIONS

NO. DESCRIPTION DATE

1 ADDENDUM 1 6.11.10
CONFORMANCE SET 7.12.10

DATE ISSUED: 07-12-10

DRAWN BY: XX
DESIGNED BY: XX

AEP PROJECT NUMBER

REVIEWED BY: XX

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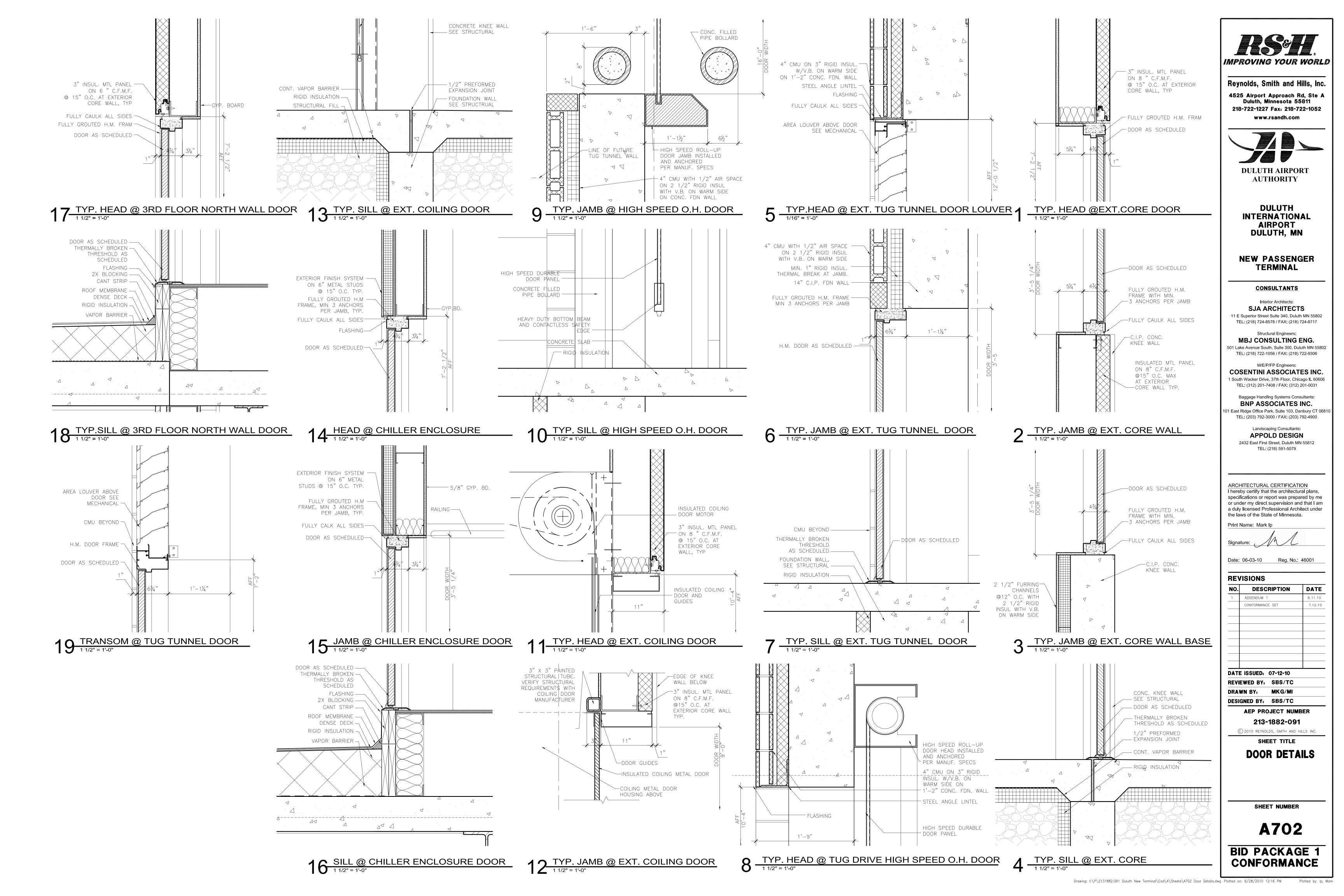
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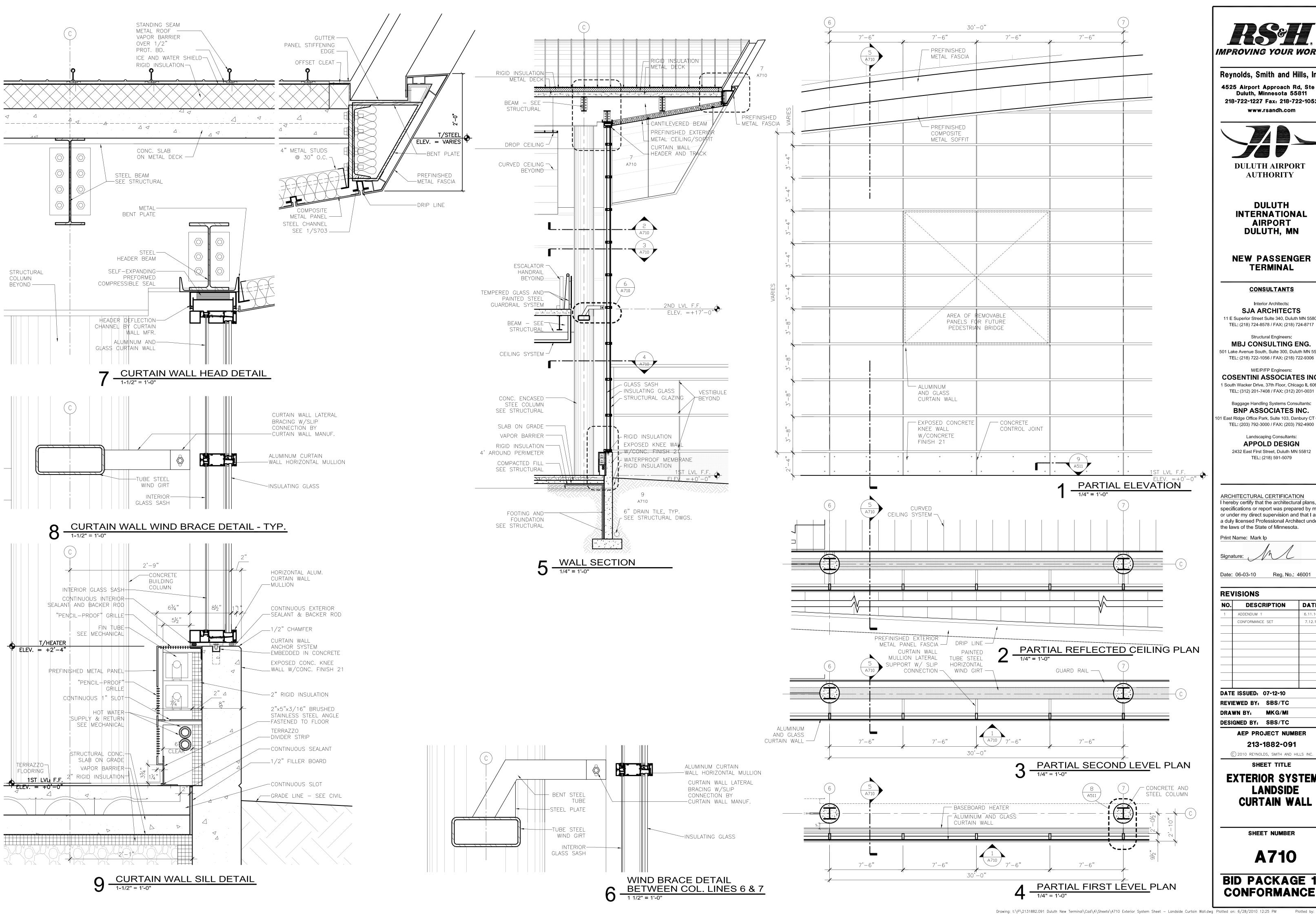
CIRCULATION

DETAILS

SHEET NUMBER

A540





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Landscaping Consultants: APPOLD DESIGN 2432 East First Street, Duluth MN 55812 TEL: (218) 591-5079

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Print Name: Mark Ip

Date: 06-03-10 Reg. No.: 46001

REVISIONS

REVISIONS				
NO.	DESCRIPTION	DATE		
1	ADDENDUM 1	6.11.10		
	CONFORMANCE SET	7.12.10		
DATI	E ISSUED: 07-12-10	-		

REVIEWED BY: SBS/TC DRAWN BY: MKG/MI DESIGNED BY: SBS/TC

AEP PROJECT NUMBER

213-1882-091

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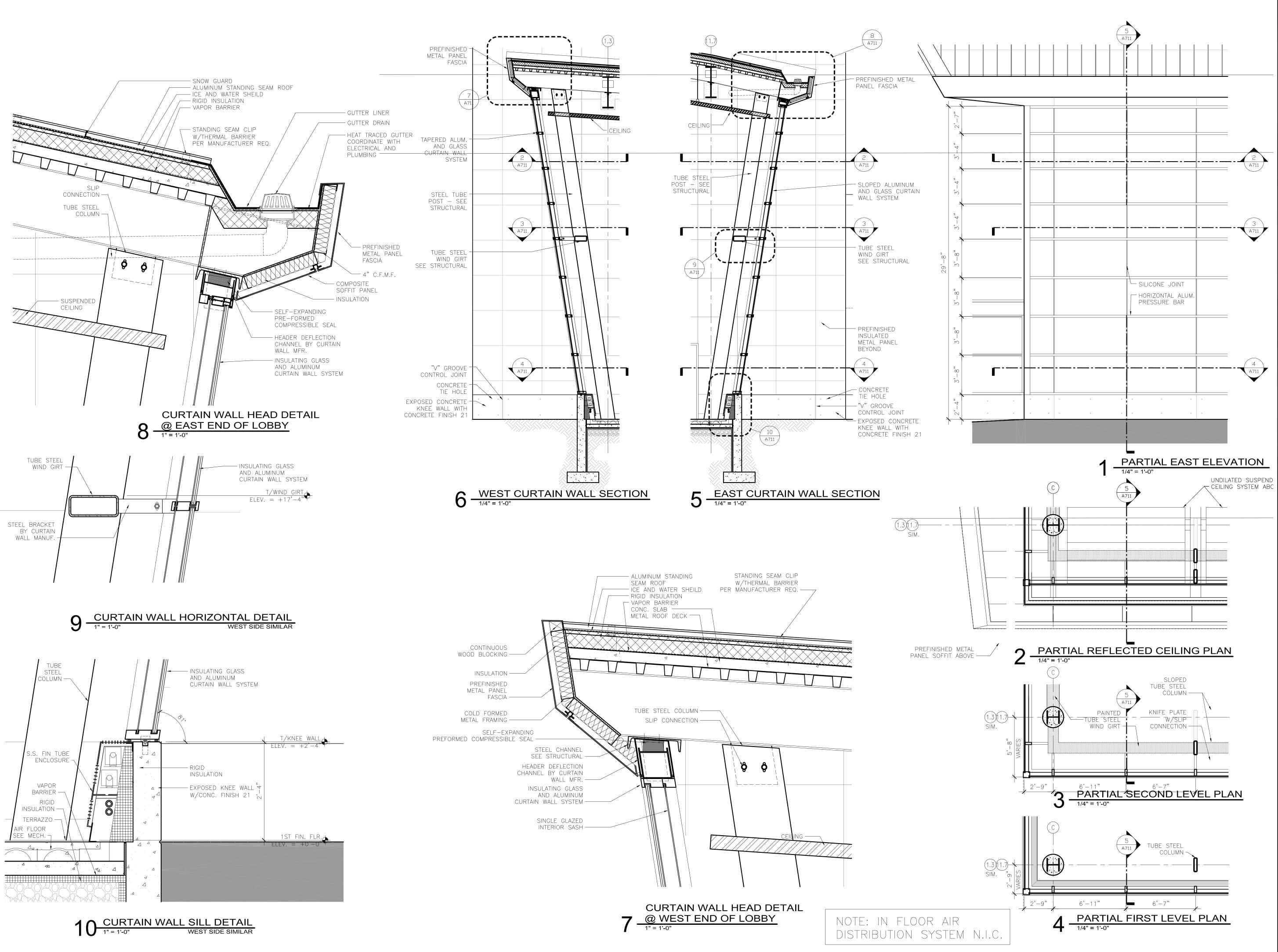
EXTERIOR SYSTEMS LANDSIDE

CURTAIN WALL

SHEET NUMBER

A710 **BID PACKAGE 1**

Drawing: t:\P\2131882.091 Duluth New Terminal\Cad\A\Sheets\A710 Exterior System Sheet — Landside Curtain Wall.dwg Plotted on: 6/28/2010 12:25 PM



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REVISIONS

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1 ADDENDUM 1 6.11.10
CONFORMANCE SET 7.12.10

DATE ISSUED: 07-12-10

REVIEWED BY: SBS/TC
DRAWN BY: MKG/MI
DESIGNED BY: SBS/TC

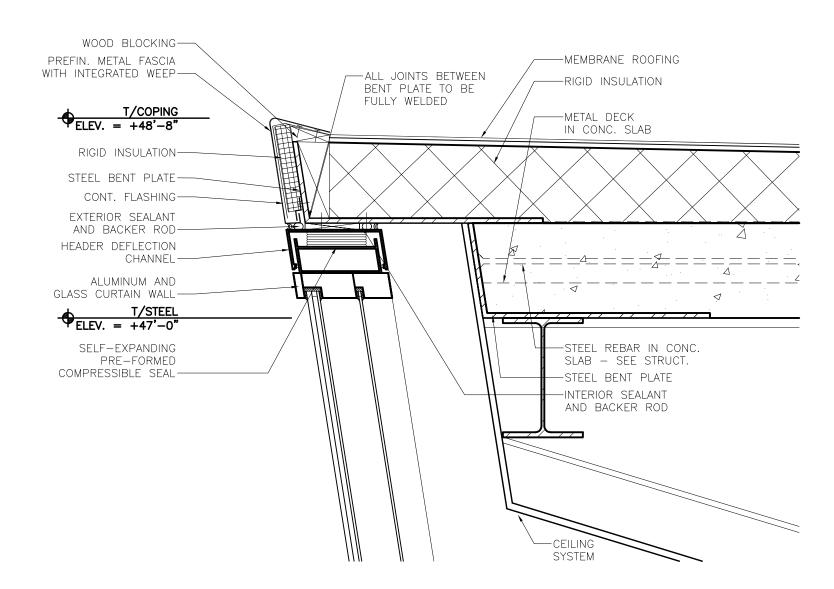
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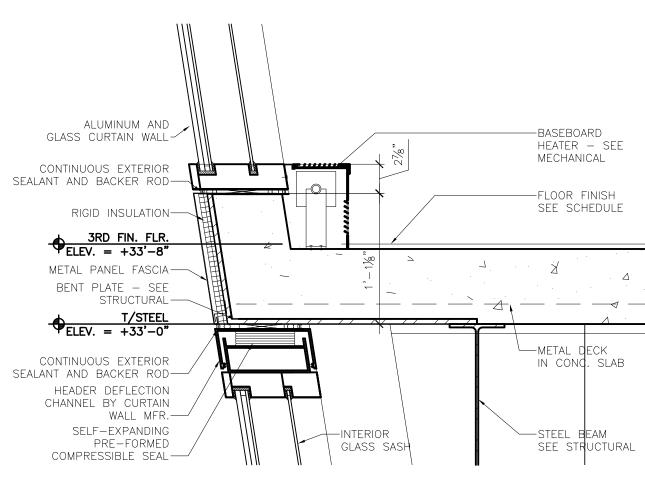
EXTERIOR SYSTEMS
LANDSIDE
CURTAIN WALL

SHEET NUMBER

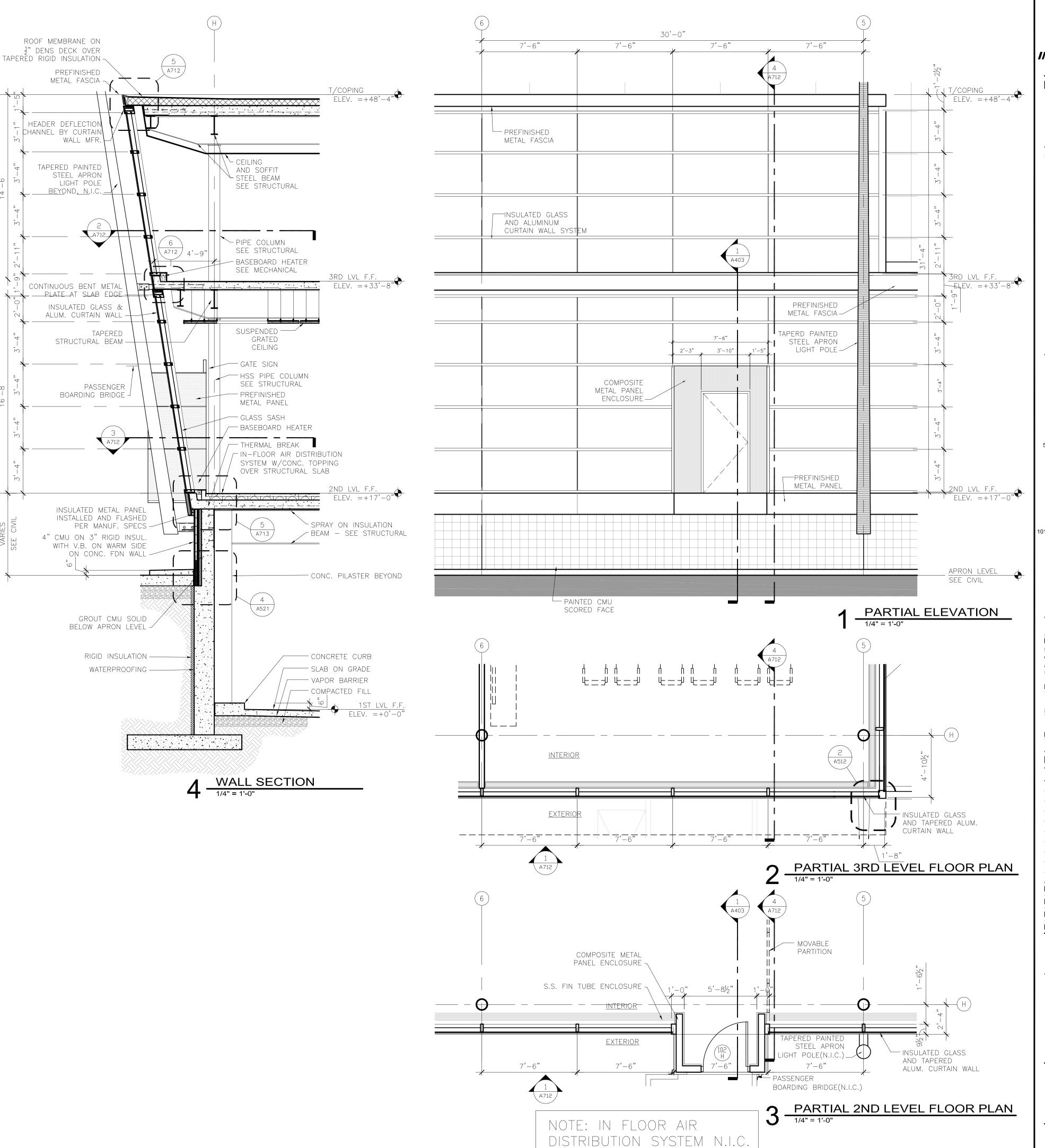
A711







6 CURTAIN WALL HORIZONTAL
MULLION DETAIL @ 2ND LEVEL
1 1/2" = 1'-0"





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REVIEWED BY: SBS/TC

DRAWN BY: MKG/MI
DESIGNED BY: SBS/TC

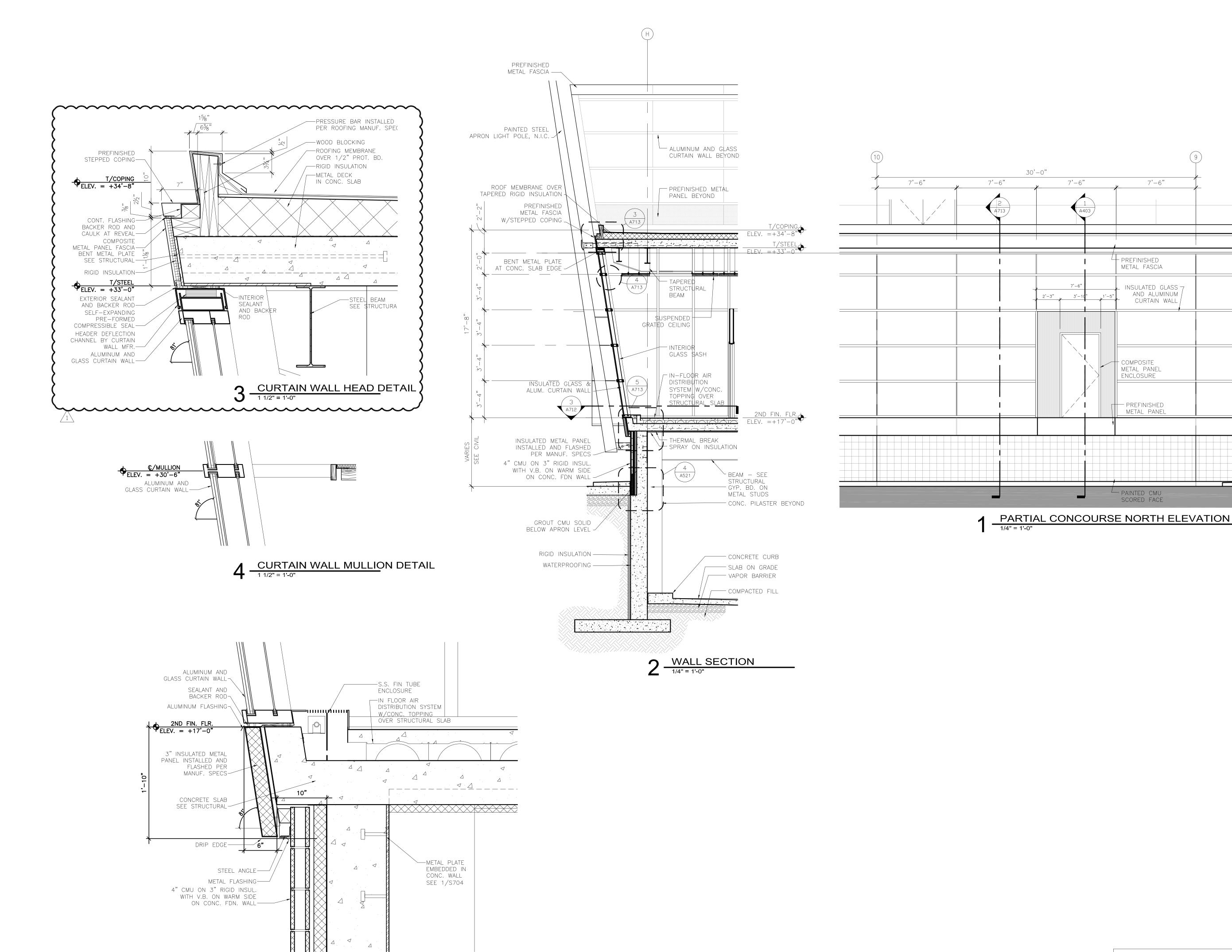
AEP PROJECT NUMBER
213-1882-091

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EXTERIOR SYSTEMS
AIRSIDE
CURTAIN WALL

SHEET NUMBER

A712



5 CURTAIN WALL SILL DETAIL
1 1/2" = 1'-0"

NOTE: IN FLOOR AIR

7'-6"

7'-6"

PREFINISHED

+ COMPOSITE

METAL PANEL

ENCLOSURE

PREFINISHED

PAINTED CMU

SCORED FACE

METAL PANEL

METAL FASCIA

INSULATED GLASS 7

AND ALUMINUM /

CURTAIN WALL



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REVISIONS		
NO.	DESCRIPTION	DATE
1	ADDENDUM 1	6.11.10
	CONFORMANCE SET	7.12.10
DATE	ISSUED: 07-12-10	

DRAWN BY: MKG/MI DESIGNED BY: SBS/TC

AEP PROJECT NUMBER

213-1882-091

REVIEWED BY: SBS/TC

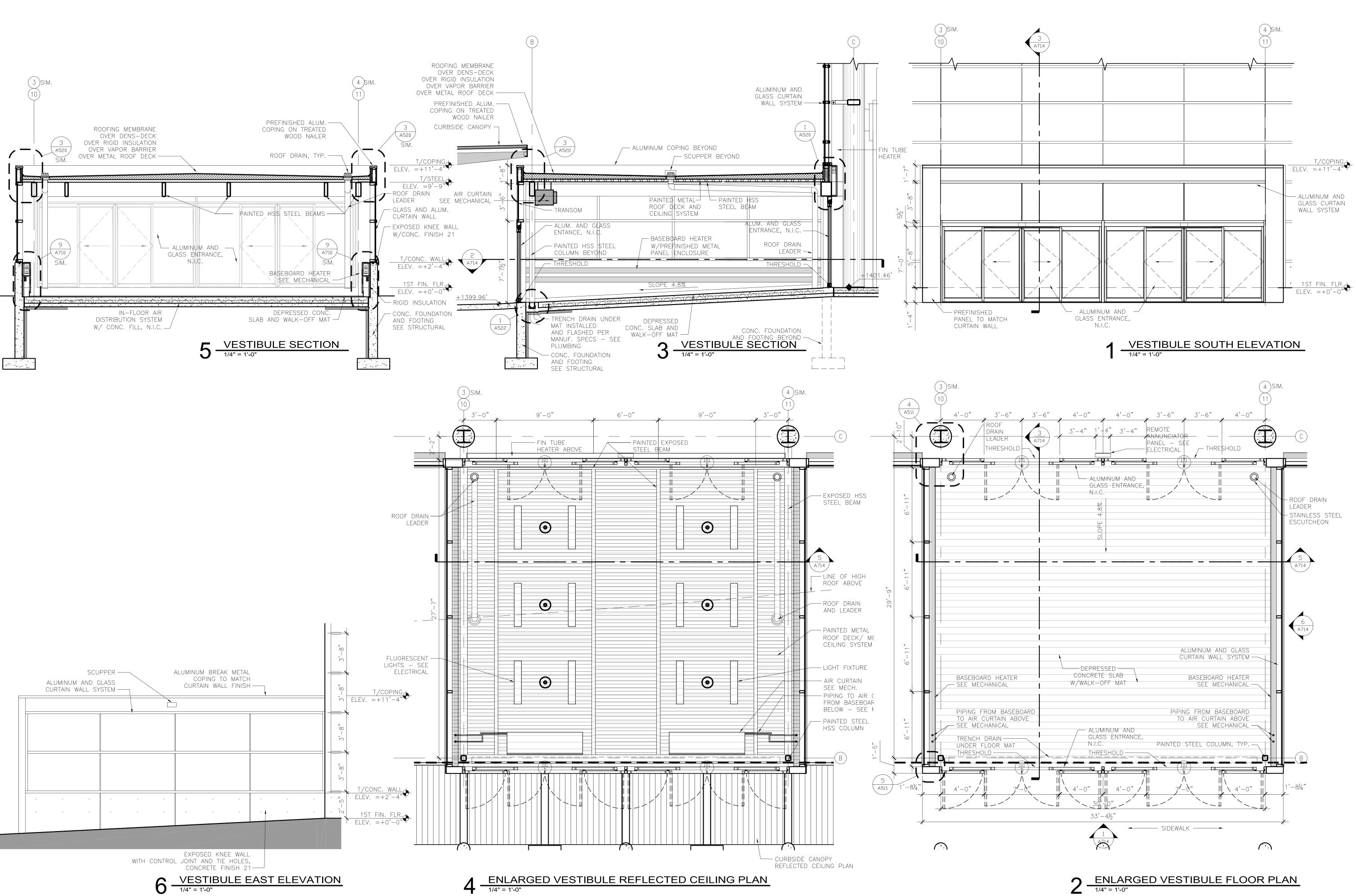
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SHEET TITLE

EXTERIOR SYSTEMS AIRSIDE CURTAIN WALL

SHEET NUMBER

A713





Reynolds, Smith and Hills, Inc.

4525 Airport Approach Rd, Ste A
Duluth, Minnesota 55811

218-722-122 www.rsandh.com



DULUTH
INTERNATIONAL
AIRPORT
DULUTH, MN

NEW PASSENGER TERMINAL

CONSULTANTS

Interior Architects:

SJA ARCHITECTS

11 E Superior Street Suite 340, Duluth MN 55802

TEL: (218) 724-8578 / FAX: (218) 724-8717

Structural Engineers:

MBJ CONSULTING ENG.

501 Lake Avenue South, Suite 300, Duluth MN 55802

TEL: (218) 722-1056 / FAX: (218) 722-9306

M/E/P/FP Engineers:

COSENTINI ASSOCIATES INC.

1 South Wacker Drive, 37th Floor, Chicago IL 60606 TEL: (312) 201-7408 / FAX: (312) 201-0031

Baggage Handling Systems Consultants:

BNP ASSOCIATES INC.

01 East Ridge Office Park, Suite 103, Danbury CT 06810

TEL: (203) 792-3000 / FAX: (203) 792-4900

Landscaping Consultants:

APPOLD DESIGN

2432 East First Street, Duluth MN 55812

TEL: (218) 591-5079

ARCHITECTURAL CERTIFICATION
I hereby certify that the architectural plans, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Architect under the laws of the State of Minnesota.

Print Name: Mark Ip

Signature:

Date: 06-03-10 Reg. No.: 46001

REVISIONS

NO.	DESCRIPTION	DAT
1	ADDENDUM 1	6.11.1
	CONFORMANCE SET	7.12.1

DATE ISSUED: 07-12-10
REVIEWED BY: SBS/TC
DRAWN BY: MKG/MI

DESIGNED BY: SBS/TC

AEP PROJECT NUMBER

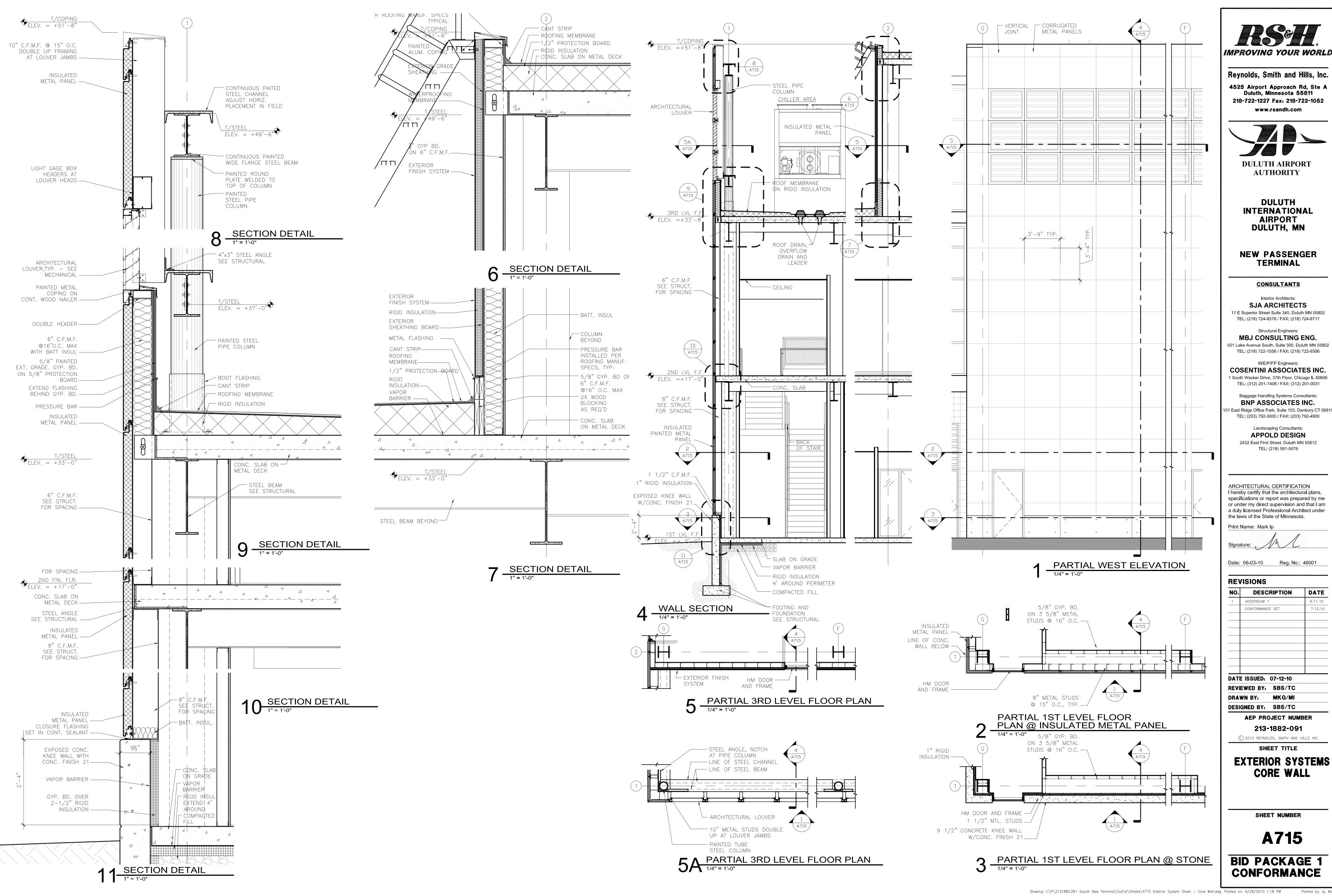
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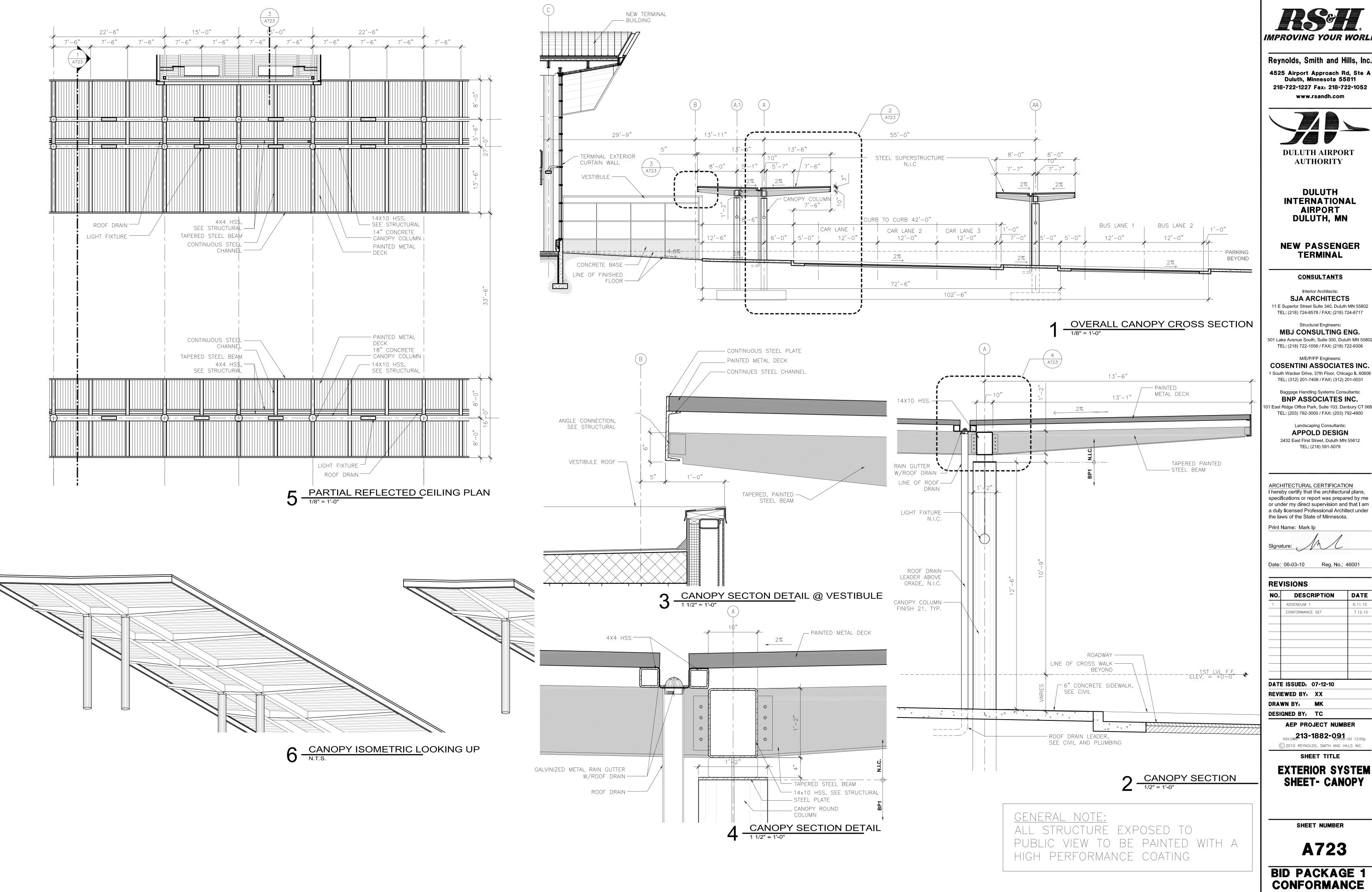
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EXTERIOR SYSTEMS ENTRY VESTIBULE

SHEET NUMBER

A714





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DULUTH INTERNATIONAL **AIRPORT** DULUTH, MN

NEW PASSENGER TERMINAL

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ARCHITECTURAL CERTIFICATION I hereby certify that the architectural plans,

TEL: (218) 591-5079

the laws of the State of Minnesota.

Print Name: Mark Ip

Date: 06-03-10 Reg. No.: 46001

REVISIONS

NO. DESCRIPTION DATE **DATE ISSUED: 07-12-10**

DRAWN BY: MK DESIGNED BY: TC

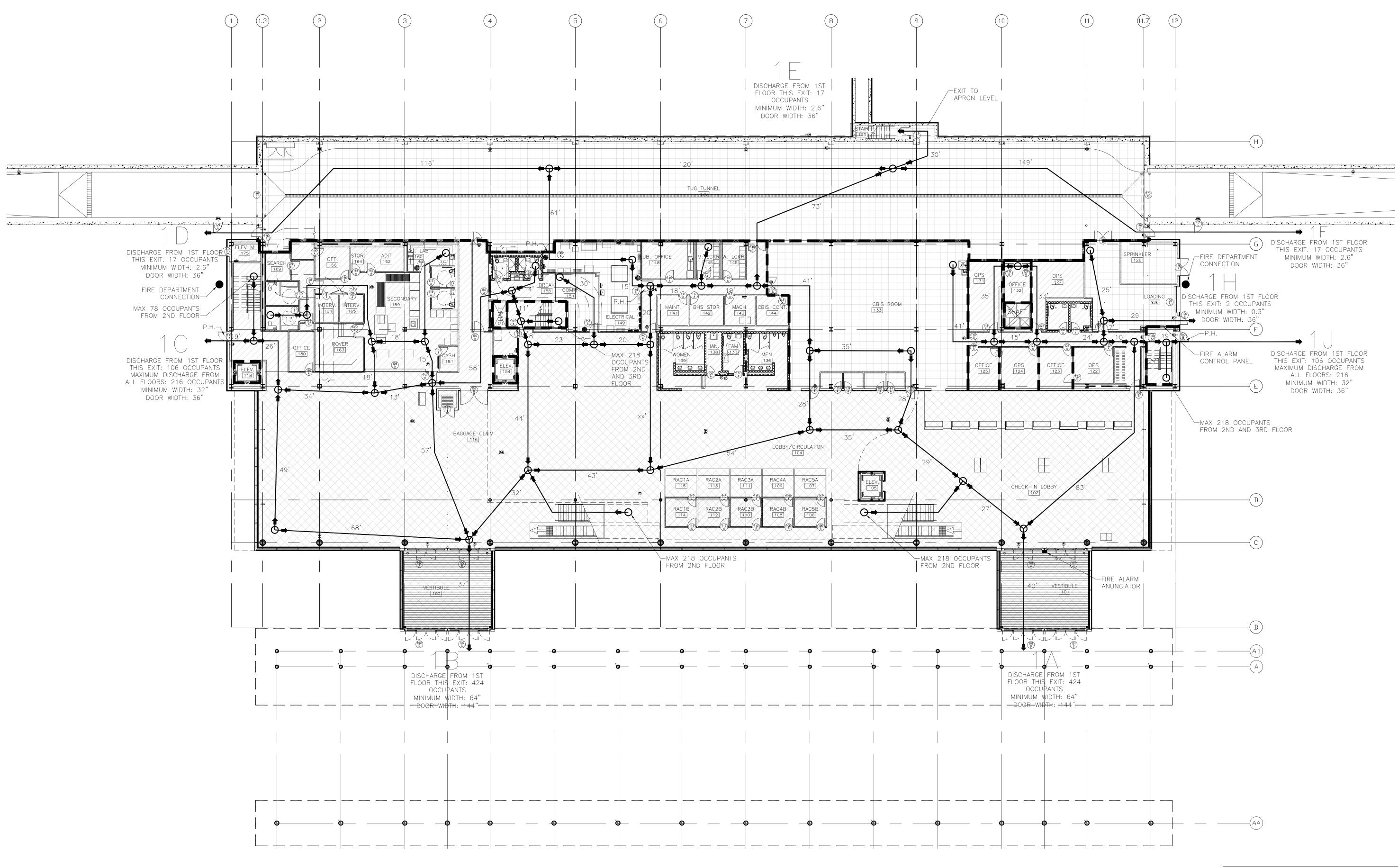
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EXTERIOR SYSTEM **SHEET- CANOPY**

SHEET NUMBER

A723



LIFE SAFETY PLAN

1/16" = 1'-0"

OCCUPANCY CALCULATION
B OCCUPANCY: 165 A3 OCCUPANCY: 934 S2 OCCUPANCY: 14 TOTAL OCCUPANTS: 1113 FIRE RATING & TRAVEL DISTANCE LEGEND 1 HR Fire Rating 0 Start Point of Travel to Exit XX' Travel Distance to Exit Fire Extinguisher Eye Wash Station Exit Sign P.H. Panic Hardware

CCUPANCY AREAS LEGEND)
CCUPANCY AREAS LEGENL	,

CCUPANCY AREAS LEGEND			
Occupancy			
Occupancy			
Occupancy			

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DULUTH INTERNATIONAL AIRPORT DULUTH, MN

NEW PASSENGER TERMINAL

CONSULTANTS

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Landscaping Consultants: APPOLD DESIGN 2432 East First Street, Duluth MN 55812 TEL: (218) 591-5079

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Print Name: Mark Ip

Date: 06-03-10 Reg. No.: 46001

REVISIONS

DESCRIPTION	DATE
ADDENDUM 1	6.11.10
CONFORMANCE SET	7.12.10
	ADDENDUM 1

REVIEWED BY: SBS/TC DRAWN BY: MKG/MI

DESIGNED BY: SBS/TC

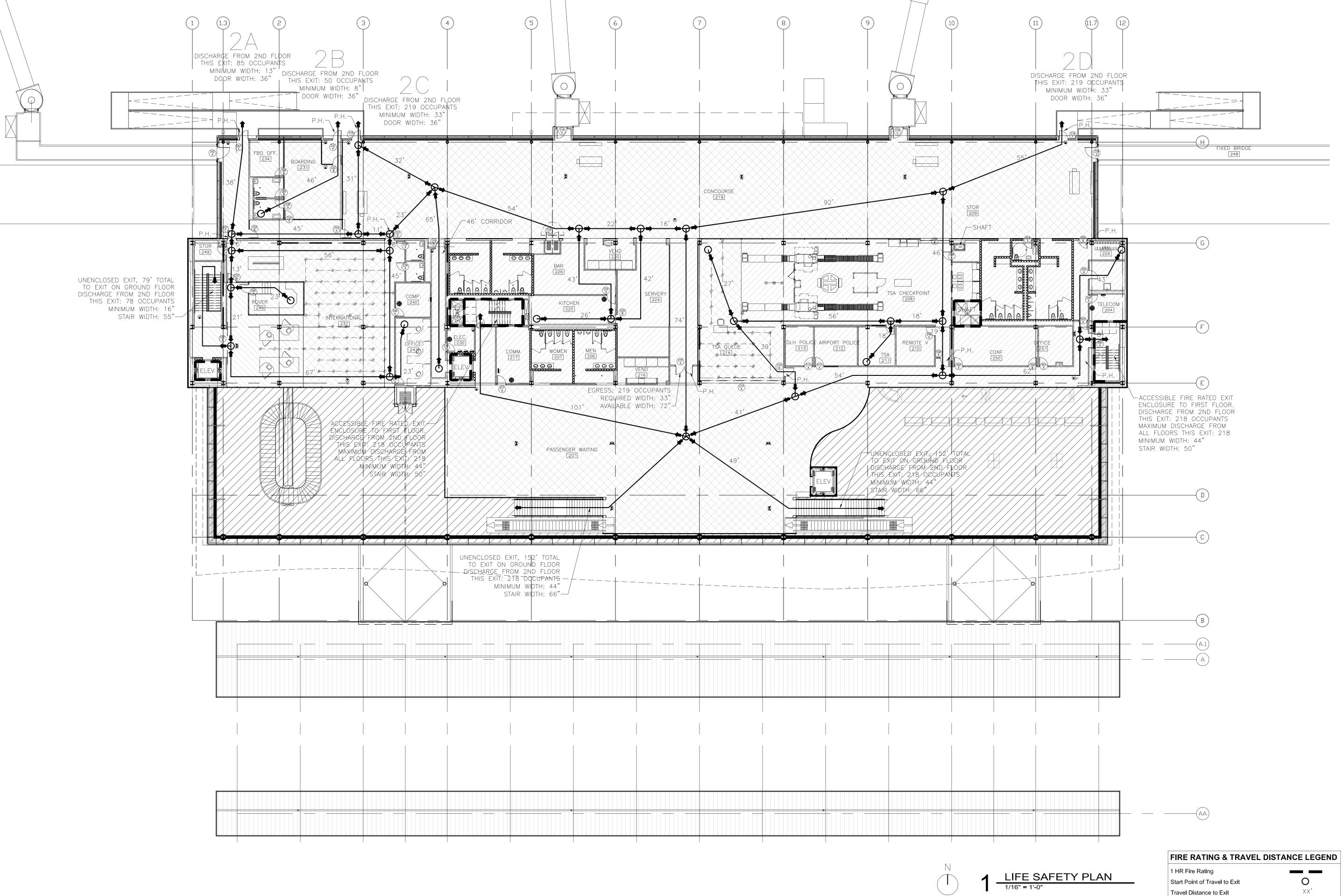
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> FIRST FLOOR LIFE SAFETY **PLAN**

SHEET NUMBER

LS101



IMPROVING YOUR WORLD Reynolds, Smith and Hills, Inc. 4525 Airport Approach Rd, Ste A Duluth, Minnesota 55811 218-722-1227 Fax: 218-722-1052 www.rsandh.com **DULUTH AIRPORT AUTHORITY DULUTH INTERNATIONAL AIRPORT** DULUTH, MN **NEW PASSENGER TERMINAL CONSULTANTS** Interior Architects: SJA ARCHITECTS 11 E Superior Street Suite 340, Duluth MN 55802 TEL: (218) 724-8578 / FAX: (218) 724-8717 Structural Engineers: MBJ CONSULTING ENG. 501 Lake Avenue South, Suite 300, Duluth MN 55802 TEL: (218) 722-1056 / FAX: (218) 722-9306 M/E/P/FP Engineers: COSENTINI ASSOCIATES INC. 1 South Wacker Drive, 37th Floor, Chicago IL 60606 TEL: (312) 201-7408 / FAX: (312) 201-0031 Baggage Handling Systems Consultants: BNP ASSOCIATES INC. 01 East Ridge Office Park, Suite 103, Danbury CT 06810 TEL: (203) 792-3000 / FAX: (203) 792-4900 Landscaping Consultants: APPOLD DESIGN 2432 East First Street, Duluth MN 55812 TEL: (218) 591-5079 ARCHITECTURAL CERTIFICATION I hereby certify that the architectural plans, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Architect under the laws of the State of Minnesota. Print Name: Mark Ip Date: 06-03-10 Reg. No.: 46001 REVISIONS NO. DESCRIPTION DATE ADDENDUM 1 7.12.10 CONFORMANCE SET **DATE ISSUED: 07-12-10** REVIEWED BY: SBS/TC DRAWN BY: MKG/MI DESIGNED BY: SBS/TC AEP PROJECT NUMBER

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•

P.H.

Fire Extinguisher Eye Wash Station

Panic Hardware

B Occupancy

A3 Occupancy

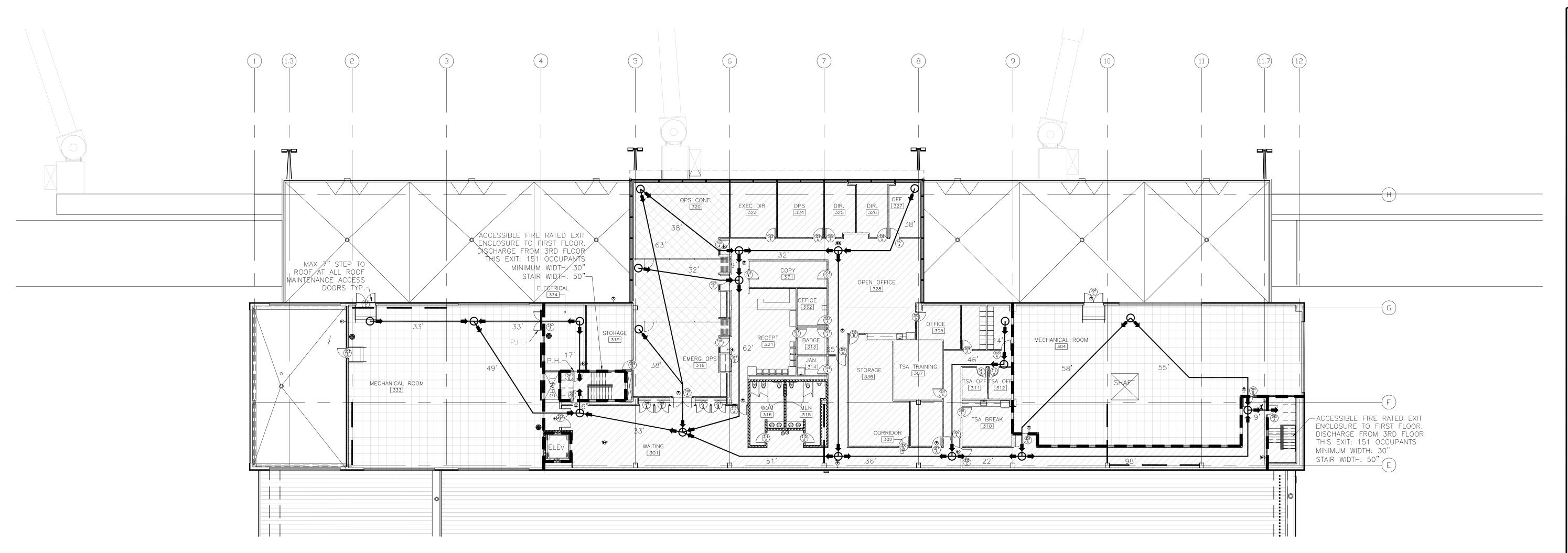
OCCUPANCY AREAS LEGEND

Exit Sign

OCCUPANCY CALCULATION

A3 OCCUPANCY: 1367 S2 OCCUPANCY: 0 TOTAL OCCUPANTS: 1540

B OCCUPANCY:



RSH.		4501117507115		
		ARCHITECTUR	AL	
Reynolds, Smith and Hills, Inc.	Co	DDE COMPLIANCE EV	ALUATION	
PROJECT:	Duluth International Airport			
PROJ #:	2131882.091			
DATE:	10/2/2009	Prepared by:	Mark Ip	
APPLICABLE CODE(S):				
	Life Safety: IBC-2006		Mechanical: IMC-2006	
	Accessibilty: IBC-2006, (ANSI/ICC) ADA		Gas: IFGC-2006	
	Building Code: IBC-2006		Electric: ICC EC-2006	
	Plumbing Code: IPC-2006		Other:	
BUILDING DATA				
	Total Gross Square Feet	101,625	6. Sprinklered	Υ

Open Space - Area Mod.

a. If yes, Building Perimeter

b. Perim. w. min 20' open space

Elevator 103 not required to be rated.

Covered Mall Occupancy, ref 402.1

2976.93

Ref 707.4

Ref 708.4.4

1077

1077

Number of Floors

. Height of Building

8. Elevator Enclosures

9. Between Tenant Spaces

Design Occupant Load

		5. GLA	2601.00	8. OLF	25.18
III	CODE REVIEW		Reference	Notes	
	Classification Of Occupancy:				
	Occupancy Type 1	Assembly for worship/recreation/amusement (A-3)	Ref 302	See section 508 for occupancy sep	paration req.
	2. Occupancy Type 2	Business (B)			
	3. Occupancy Type 3	Storage Low Hazard (S-2)			
	4. Occupancy Type 4				
	5. Occupancy Type 5				
	6. Governing Occupancy	Assembly for worship/recreation/amusement (A-3)			
В	Construction Type:	II-B	Ref 602	Noncombustible Frame, Walls, Flo	or, Roof
С	Area Limitation:	Unlimited	Ref Chap 5	Covered Mall Occupancy, ref 40	2.1
D	Height Limitation:	55	Ref Chap 5		
Е	Maximum number of Floors:	3	Ref Chap 5	Covered Mall Occupancy, ref 40	2.1
F	Fire Protective Requirements:		Ref 601/Chap 7	Note: FP adjusted for const. type &	sprinklers
	Structural Frame	0	Ref 601/Chap 7		
	Supporting Roof Only	0	Ref 601/Chap 7		
	2. Bearing Walls				
	Exterior	0	Ref 601/Chap 7		
	Interior	0	Ref 601/Chap 7		
	Supporting Roofs Only	0	Ref 601/Chap 7		
	3. Nonbearing Walls/Partitions				
	Exterior <5' Separation	1	Ref Table 602	Note: Adjusted for Group and Cons	t Type
	Exterior 5'-9' Separation	1	Ref Table 602		
	Exterior 10'-29' Separation	0	Ref Table 602		
	Exterior >30' Separation	0	Ref Table 602		
	Interior	1hr between tenants	Ref Table 602	Ref: 708.4 partitions to underside of	of ceiling
	4. Floor Construction	0	Ref 601/Chap 7		
	5. Roof Construction	0	Ref 601/Chap 7		
	6. Corridors	0 hr if occupant load is >30	Ref 1016.1		
	7. Stair/Ramp Enclosures	1 hr, see 1020 for exceptions	Ref 1020/706		

1 hr, see 707 for details

1hr, to underside of ceiling only

11	CODE REVIEW (cont.)		Reference	Notes
G	Occupant Load			
	1. Design Occupant Load	3499.48	Ref 1004.1	
	2. GLA	2601.00	Ref 402.4	
	3. OLF	25.18	Ref 402.4	Def 4005 for Assembly Occurrencies
7	Means Of Egress	FOR the shape	Ref Chap 10	Ref 1025 for Assembly Occupancies
	Minimum Egress Width Minimum number of exits	525 inches	Ref 1005.1	0.15 inches x 3500 occupants
		2 12	Ref 1019.2	Ref 1019.1 for req. exits by room
	- Actual number of exits	12		Ref 1018.2 for single exit requirements
	Capacity of each Exit Width of each Exit			
	- Width of each Exit	36 576 inches		
			Dof 400 4 4	May Travel Distance to Evit or Mall
	 Maximum travel Distance (f Dead End Corridor Limit 		Ref 402.4.4	Max Travel Distance to Exit or Mall
		A: 20', B: 50'	Ref 1017.3	See ref for Group I occupancies
	6. Min. Corridor Width	44"	Ref 1017.2	For Exit Passageway corridor, see H8 below
	7. Interior Corridor Rating	0 hr if occupant load is >30	Table 1017.1	
	Exit Passageway a. Width	m:n 44	Ref 1021	
		min 44		
	b. Fire Rating	Min 1hr or match adjacent if higher	Ref 1021.3	
	c. Door rating	1/3 hr		
	Ramps a. Minimum Width	2011 asian mat long them comisters	Ref 1010.5.1	
		36" min., not less than corridors.		
	b. Maximum Slope	1:12 (8%) for egress, 1:8 (12.5%) other	Ref 1010.2	
	c. Height Between Landings	30	ref 1010.4	
	10. Doorways:	Can 4045 4 for requirements for each record	D-f 4045 4	
	a. Minimum Number	See 1015.1 for requirements for each room Min 32"	Ref 1015.1 Ref 1008.1.1	
	b. Door Size	-		
	c. Special Size Rqts.	See 1008.1.1 for exceptions	Ref 1008.1.1	
	11. Horizontal Exit:	D-1705 700 for a resulting	D-14000 0	
	a. Separation	Ref 705, 706 for separations 2 hr	Ref 1022.2	
	b. Fire Rating		Ref 1022.2	
	c. Area Of Refuge	3 sf per occupant, see references	Ref 1022.4	
	12. Exit Stairways:	Can references	D-f 4000/4040	
	a. Capacity	See references	Ref 1009/1019	Note: Adjusted for many Occupants
	b. Width	min 44 80"	Ref 1009/1005 Ref 1009.2	Note: Adjusted for max Occupants
	c. Min. Headroom			
	d. Max. Ht. Between Landi	12 7"	Ref 1009.6	
	e. Max. Riser Height	11"	Ref 1009.3	
	f. Min. tread width		Ref 1009.3	
	g. Door Rating	1 hr	Ref 715.4	
	h. Enclosure	1 hr, see 1020 for exceptions	Ref 1020/706	
	I. Smokeproof tower	Req'd if flr > 75' above or >30' below exit discharge	Ref 1020.1.7	Con plan 4007 7
	j. Handrails 13. Interior Finishes	1.25" - 2" dia. W. 1.5" clearance W. 12" extension	Ref 1012	See also 1607.7
		D.	Ref Chap 8	
	a. Exits, Vertical & Passa		Ref 803.5	
	b. Exit Access Corr.	В	Ref 803.5	
	c. Rooms & Enclosed	C	Ref 803.5	
	Compartmentalized Areas:	For floors > 60' below exit discharge, see Ref	Ref 405.1	
	Protection of Vert.Openings	Fire door Ref 715.3	Ref 1020.1.1	
	Exit Lighting	Min. 1 fc (11lux) along egress, see ref for exceptions	Ref 1006	
	Extinguishment Requirements		Ref 906	
VΙ	Mech.Conveyance (Vertical)	See references	Ref 3005	1

N	
1	LIFE SAFETY PLAN
	1/16" = 1'-0"

OCCUPANCY CALCULATION B OCCUPANCY: 128 A3 OCCUPANCY: 144 S2 OCCUPANCY: 30 TOTAL OCCUPANTS: 302

OCCUPANCY AREAS	LEGEND
Panic Hardware	P.H.
Exit Sign	1⊕1
Eye Wash Station	
Fire Extinguisher	•
Travel Distance to Exit	XX'
Start Point of Travel to Exit	0
1 HR Fire Rating	

FIRE RATING & TRAVEL DISTANCE LEGEND

S2 Occupancy B Occupancy A3 Occupancy

IV PLUMBING CODE REVIEW

v	I LUMBING CODE INLANCE				
4	Min. Plumbing Fixture Req'ts:				
	Water Closets	Men's WC Required	9.37	Women's WC Required	9.37
		Men's WC Provided	22	Women's WC Provided	22
	2. Lavatories	Men's Lavatories Required	5.75	Women's Lavatories Required	5.75
		Men's Lavatories Provided	15	Women's Lavatories Provided	17
	3. Baths	Baths Required	0.00		
		Baths Provided	0		
	4. Drinking Fountains	Drinking Fountains Required	7.70		
		Drinking Fountains Provided	4		
	5. Sinks	Sinks Required	1.00		
		Sinks Provided	3		



Reynolds, Smith and Hills, Inc. 4525 Airport Approach Rd, Ste A Duluth, Minnesota 55811 218-722-1227 Fax: 218-722-1052 www.rsandh.com



DULUTH INTERNATIONAL **AIRPORT** DULUTH, MN

NEW PASSENGER TERMINAL

CONSULTANTS

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TEL: (218) 724-8578 / FAX: (218) 724-8717 Structural Engineers:

MBJ CONSULTING ENG. 501 Lake Avenue South, Suite 300, Duluth MN 55802 TEL: (218) 722-1056 / FAX: (218) 722-9306

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Baggage Handling Systems Consultants: BNP ASSOCIATES INC. 101 East Ridge Office Park, Suite 103, Danbury CT 06810 TEL: (203) 792-3000 / FAX: (203) 792-4900

> Landscaping Consultants: APPOLD DESIGN 2432 East First Street, Duluth MN 55812

TEL: (218) 591-5079

ARCHITECTURAL CERTIFICATION I hereby certify that the architectural plans, specifications or report was prepared by me

or under my direct supervision and that I am a duly licensed Professional Architect under the laws of the State of Minnesota.

Print Name: Mark Ip

Date: 06-03-10 Reg. No.: 46001

EVISIONS				
) .	DESCRIPTION	DATE		
	ADDENDUM 1	6.11.10		
	CONFORMANCE SET	7.12.10		
一				

REVIEWED BY: SBS/TC DRAWN BY: MKG/MI DESIGNED BY: SBS/TC

AEP PROJECT NUMBER

DATE ISSUED: 07-12-10

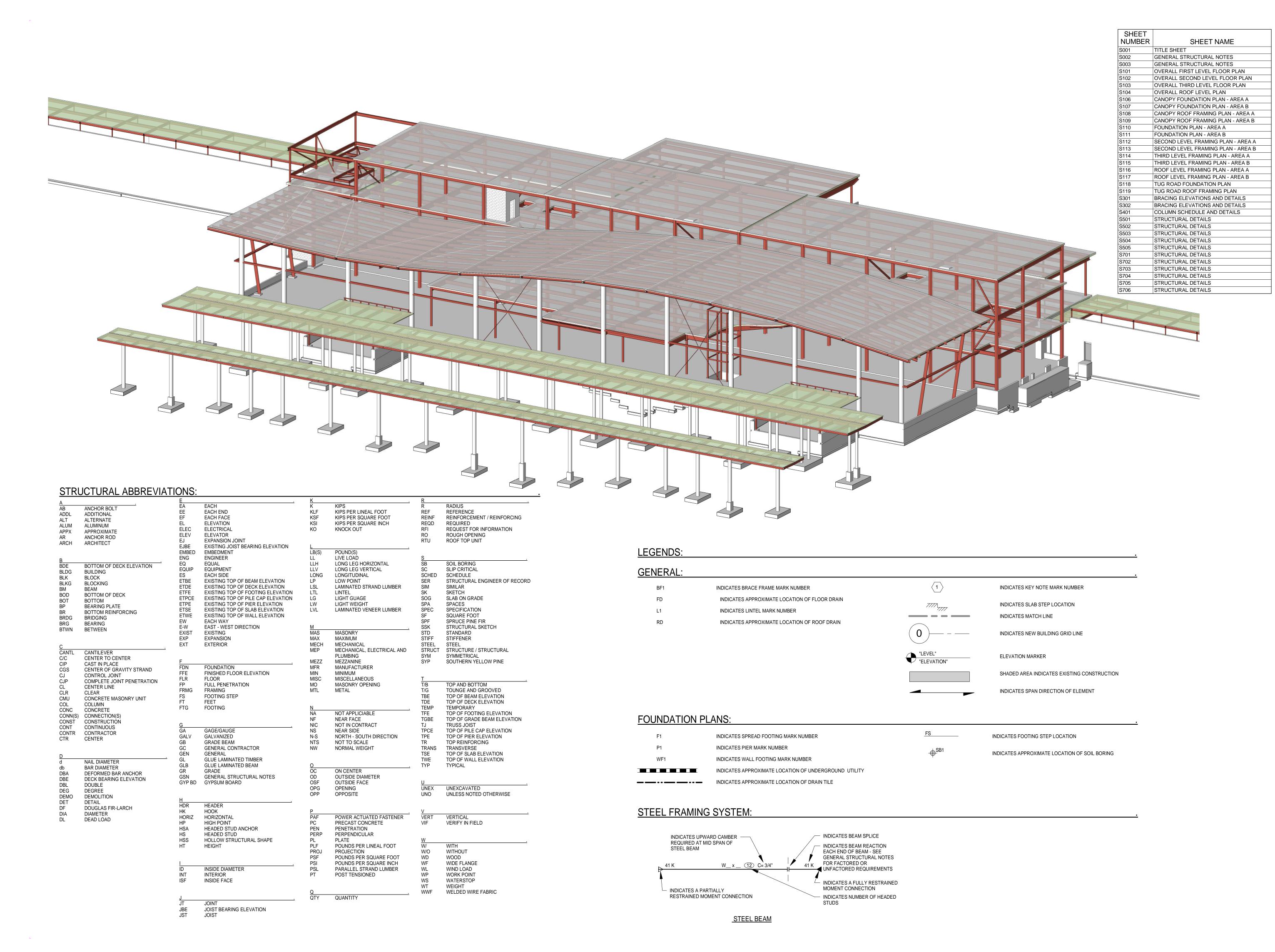
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SHEET TITLE

THIRD FLOOR LIFE SAFETY **PLAN**

SHEET NUMBER

LS103





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DULUTH INTERNATIONAL **AIRPORT** DULUTH, MN

NEW TERMINAL DESIGN

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Landscape Consultants: **APPOLD DESIGN** 2432 East First Street, Duluth MN 55812 TEL: (218) 591-5079

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the

laws of the State of Minnesota. Print Name: Paul A. Johnson

Signature: / Well

Date: June 3, 2010 Reg. No.: 20379

RE۱	/ISIONS	
NO.	DESCRIPTION	DATE
	Conformance Set	07-12-1

REVIEWED BY: PAJ / CWB **DRAWN BY:** SJL **DESIGNED BY:** CWB

DATE ISSUED: 07-12-10

AEP PROJECT NUMBER

213-1882-091

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SHEET TITLE TITLE SHEET

SHEET NUMBER

S001

The contractor shall verify all dimensions and existing conditions in the field that affect construction prior to commencing work on the affected element or shop drawing submittals. Resolve any discrepancies with the architect prior to construction.

The contract structural drawings and specifications represent the completed structure. The contractor is responsible for bracing and shoring (without overstressing) all structural elements as necessary at any stage of construction until completion of the project. The Structural Engineer is not responsible for the contractor's means, methods, sequences or procedures of construction. Contractor shall recognize and consider effects of thermal movements of structural elements during construction period.

The contractor is solely responsible for site safety including all temporary precautionary measures and safety programs. Site observation visits by the Structural Engineer do not include review of the contractor's safety precautions.

Refer to architectural, mechanical and electrical drawings for locations, elevations, dimensions, and details of sleeves, inserts, openings, recesses, curbs, housekeeping pads, etc. that are not shown on the structural drawings and do not damage structural members.

Information shown in the structural drawings regarding existing conditions represents the current and general field conditions related to the new work, to the best of our knowledge. Report all discrepancies to the Architect for resolution prior to performing related new work.

Requests for information shall be submitted in writing and shall reference the part of the construction

SPECIAL INSPECTIONS:

documents that is in question.

Contractor shall read and understand their duties in the specification and under the building code for special inspections and coordinate as necessary the owner's responsibilities.

The special inspectors shall be provided and shall only use approved shop drawings.

Special inspection reports are to be submitted immediately to the SER, Architect, and Contractor daily when inspections are performed.

The general contractor shall provide timely notice to the special inspector and sufficient time for the inspector to perform their inspection

SHOP DRAWINGS

All engineering design provided by others and submitted for review shall bear the certification stamp and signature of a qualified professional engineer who is licensed in the state of Minnesota.

Submit shop drawing schedule with construction schedule that includes consideration for review period. See specification for additional information.

DEFERRED SUBMITTALS: The following items shall be issued as deferred submittals per IBC: Steel Connections

Light gage metal framing

All items issued as deferred submittals shall be issued a minimum of 30 days prior to installation and shall not be installed until their design and submittal documents have been reviewed for general conformance to the drawings by the general contractor, the engineer of record and the building official. A copy of the deferred submittal shall be forwarded to the city after the engineer of record has reviewed the documents and prior to erection of the deferred submittal items.

DESIGN CODES AND STANDARDS: Minnesota State Building Code, MSBC 2007

2006 International Building Code, as amended and adopted by the MSBC 2007

ACI 318-05 Building Code Requirements for Reinforced Concrete

ACI 530-05 Building Code Requirements for Masonry Structures, Allowable Stress Design

ACI 530.1-05 Masonry Structures

AISC 360-05 Specification for Structural Steel Buildings

AISI NAS-01 North American Specification for the design of Cold-Formed Steel Structural Members including 2004 supplement.

ASCE 7-05 Minimum design loads for buildings and other structures including supplement NO. 1 and excluding Chapter 14 and Appendix 11A.

ASCE 3-01 Structural Design of Composite Slabs

MATERIAL PROPERTIES: Reinforcing Steel (Fy):

Controlled Low

ATSM A615 Grade 60 Typical 60,000 psi ASTM A706 Grade 60 Weldable 60,000 psi

2,000 psi

35,000 psi

50,000 psi

36,000 psi

33,000 psi

1,200 psi (at 5 days) Maximum

ASTM A53

ASTM A325

ASTM A490

ASTM A36

ASTM A653

ASTM F1554

ASTM A572 or A36 as indicated

Cast-in-Place Concrete (f'c) at 28 days, UNO:

500 psi (at 5 days) Minimum Strength Material (CLSM) Footings Piers and Walls 4,000 psi 4,000 psi Concrete placed over Metal Floor Deck 4,000 psi Slabs on Grade 4,000 psi Exterior Concrete 4,000 psi Masonry Corefill Concrete 3,000 psi All Concrete not otherwise noted 4,000 psi

Concrete Masonry- Prism (f'm): Typical Units:

Grade B Steel Pipe

Plates, Bars

Threaded Rods

Structural Steel (Fy): ASTM A992 Wide Flanges 50.000 psi Angles, Channels 36,000 psi ASTM A36 Grade B Rectangular HSS ASTM A500 46,000 psi ASTM A500 Grade B Round HSS 42,000 psi

Structural Fasteners: Typical High-Strength Bolts 92,000 psi High-Strength Bolts as noted on plan 150.000 psi Grade 36 Anchor Rods, UNO 36,000 psi

Track, Channels and Accessories

Direct -Tension Indicator Washers as noted on plan ASTM F959 Cold-formed Light Gauge Metal Framing (Fy): Studs, Joists, Braces-16 ga. and heavier 50,000 psi ASTM A653 ASTM A653 Studs, Joists, Braces-18 ga. and lighter 33,000 psi

Primary Frame Wind Data: Basic Wind Speed:

> Exposure: Primary Seismic Data: No design required

Wind Importance Factor:

Component Loads: Exterior Component/Cladding: Supplier to develop based on MSBC 2007 and to indicate on shop drawings.

GRAVITY LOADS: Roof Snow Load: Ground Snow Load, Pg:

Flat-Roof Snow Load, Pf 46 psf 0.70 Snow Exposure Factor, Ce: Snow Load Importance Factor, I: Unbalanced/Drift Snow Load: As required by ASCE 7

1.15

Floor Loads:

100 psf (not reducible) Hanging loads at underside of 2nd floor: 40 psf superimposed Stairs, Corridors and Lobbies: 100 psf (not reducible)

Design for one story expansion of 3rd floor office space north of grid "G".

Mechanical Rooms: 150 psf (not reducible)

Exterior Site Surcharge Loads: Fire Trucks:

Stair Tread Concentrated Load:

Sidewalk: North terminal retaining wall and north HS20-44 axle load as defined by IBC 2006 table 1607.6 at a tug tunnel retaining wall:

distance of 5 feet from the north wall edge.

300 lbs

60 psf

Provisions For Future Expansion: Design for additional 30' bay (3 story) between grids "E" and "G", east of grid 12 and west of grid 1.

Refer to Geotechnical report number AET #07-04216.2 by American Engineering Testing, Inc., dated October 14, 2009 and the subsequent addendum (AET project #07-04216.3) dated January 29, 2010.

The contractor shall verify the location of all existing and new underground utilities and tanks prior to beginning

excavation and contact Gopher State One Call. The minimum dimension from exterior grade to bottom of footing and foundation shall be 72" in unheated areas.

For underground utilities adjacent to foundations and through foundations reference drawings for detail showing step

footings below utilities as required to avoid undermining of structure by utilities. See geotechnical report for water table elevations. Contractor to make adequate provisions for dewatering as

Footings are designed for a maximum allowable soil bearing pressure of 8000 pounds per square foot on undisturbed native soil or lean mix concrete/controlled low strength material fill. Soil bearing pressure is to be verified in the field during construction by a qualified Geotechnical Engineer.

All topsoil, fill, organic swamp deposits, and/or other unsuitable bearing material shall be removed below the footings and/or within the building area to the depths indicated in the geotechnical engineering report and extent of removal shall be field verified by the Geotechnical Engineer.

All excavations shall be observed by a qualified geotechnical engineer to verify removal of unsuitable material and

confirm the proper preparation of bearing conditions. For footings that do not bear on natural undisturbed soil, extend engineered fill laterally beyond bottom edge of footing

for a distance equal to the depth of engineered fill. Reference drawings for details. Foundation and retaining walls shall be back filled with free draining fill approved by the Geotechnical Engineer.

Provide drain tile required by the contract documents and verify with architect and civil engineer.

Backfill equally on both sides of foundation walls to prevent overturning or lateral wall movement, or temporarily brace as necessary until permanent bracing elements are complete and cured to design strength.

All temporary bracing, cribbing, shoring or underpinning not fully designed or detailed on these drawings shall be designed by a licensed specialty engineer engaged directly by the contractor.

For stepping of wall footings reference drawings for detail.

REINFORCED CONCRETE

The detailing, fabrication and erection of all reinforcing shall be done in accordance with the latest edition of ACI-315, "Manual of Standard Practice for Detailing Reinforced Concrete Structures and ACI-318, "Building Code

All reinforcing bars are deformed and continuous, unless noted otherwise. Refer to drawings for reinforcing lap

Provide suitable wire spacers, chairs, etc. for support of reinforcing steel in proper position while placing concrete. All bars shall be tied to prevent displacement while placing concrete. All chairs and slab bolsters shall be plastic or steel with plastic tips. When reinforcing steel is epoxy coated or p/t tendons are fully encapsulated, all chairs and slab bolsters shall be epoxy coated or plastic and all support bars shall be epoxy coated. Chairs are to be stable and resist tipping. Acceptable products are GTI or approved equal.

The fabricator shall submit a complete list of accessories and placing details with the shop drawings.

No horizontal construction joints shall be placed in beams, joists, or slabs, unless shown on drawings.

Locate vertical construction joints in beams and slabs at central one third of span. Refer to drawings for details. Submit proposed construction joint locations to the Structural Engineer of Record for review prior to placement of concrete. Where new concrete is placed against existing concrete, the existing concrete shall be roughened to a

Refer to drawings and ACI 318 Chapter 6 for placement guidelines of embedded pipes, sleeves, and conduits. Conduits are not permitted in slabs 3 inches or less in thickness. The maximum size of conduits within any slab shall be 1 1/4" outside diameter and shall be spaced no closer (to each other or any reinforcing steel) than 4" unless prior approval is obtained from the structural engineer. Additional reinforcing steel and chairs may be required to support embedded conduit. All conduit shall be placed in the middle 1/3 of the slab thickness above the metal deck, typical. Conduit may not be tied to parallel reinforcing steel. Conduit may not be paced in deck flutes. Conduit may not cross within slabs 5" or less in thickness. Conduit placement drawings may be required in areas of high conduit concentricity.

Provide a 3/4 inch chamfer for all exposed concrete corners. See Architectural drawings for details and additional

The general contractor shall notify the Special Inspector a sufficient period in advance of placing concrete to allow required inspections and testing to occur in a timely fashion.

Formwork and all shoring for flatwork shall be left in place until the concrete reaches at least 75 percent of the 28day compressive strength. Design of shoring and reshoring is the responsibility of the contractor and shall conform

Aluminum conduit, aluminum sleeves and aluminum embeds are not permitted in concrete.

Exterior concrete to have 6% +/- 1% entrained air.

Calcium chloride is not permitted as a concrete additive

Concrete Cover on Reinforcing:

Topping Slab: 3/4" clear top. See drawings for cover at composite slabs Slab on Grade: 3" bottom

Footings: 3" clear bottom and sides

2" clear top Walls: #5 and smaller 1 1/2" clear earth or weather face #6 and greater 2" clear earth or weather face 3/4" interior face

Columns and Beams: 1 1/2" clear to ties or stirrups

CONCRETE SLABS ON GRADE: Slabs on grade shall be place in lane fashion.

The control or construction joints shall be placed as shown on the drawings. The joints shall align with the column grids and be spaced as noted below:

Exterior slabs 24 times slab thickness, maximum; Interior slabs 36 times slab thickness, maximum: Interior slabs 48 times slab thickness, maximum, with carpeting

The panels formed by control or construction joints shall not be "L" shaped and a rectangular panel's aspect ratio shall not exceed 1.5.

Refer to the drawings for the typical slab on grade construction and saw cut control joint detail. Control and construction joints must be continuous and not offset.

Refer to drawings for detail of isolation diamonds or circles at columns.

Refer to drawings for reinforcing at re-entrant corners. Bend bars as necessary at obstructions.

Refer to the specification for the existence, type, and thickness of interior ground vapor retarder. Locate a vapor retarder directly beneath the slab on grade on top of a 6 inch compactable granular base. Refer to the specification for requirements for the compactable granular base.

Mechanically vibrate concrete around trench drains, floor ducts, construction joint dowels, loading docks, architectural features and other embedded items.

Refer to the specification for slab on grade pre-placement meeting.

Refer to the specification for acceptable methods of curing the concrete.

Refer to flooring manufacturer's specification for levelness, flatness and curing of concrete slabs on grade to receive special architectural floor finishes.

REINFORCED MASONRY: All masonry units are placed in running bond fashion. Corners shall have a standard bond by overlapping units.

Special shapes shall be provided for jambs, columns, pilasters, control joints, corners, and lintels.

All masonry walls shall have horizontal joint reinforcing spaced at 16" o.c. Horizontal joint reinforcing shall be truss style and fabricated with galvanized nine-gauge wire and shall include corner and intersecting wall pieces. Provide minimum 6" laps at all splices.

Vertical reinforcing shall be held in place by rebar positioners, crossties, chairs, or tying to every other layer of horizontal reinforcing steel. Refer to the detail in the drawings for vertical reinforcing bar location in a core.

Refer to detail in the drawings for reinforcing bar lap lengths.

Provide concrete cover of minimum 1/2" to face shell.

Extend vertical reinforcing from footings to 2" clear top of wall or to beam bearing. Extend vertical reinforcing into the next level of construction and lap in accordance with the lap schedule.

When typical vertical wall reinforcing is interrupted by long wall openings, provide typical vertical wall reinforcing above and below opening, and extend into horizontal bond beams. Refer to the schedule on the drawings, for masonry wall opening lintels. Refer to the detail in the drawings for masonry openings minimum jamb reinforcing.

Provide vertical reinforcing at the ends of walls and at wall intersections to match specified reinforcing. Run reinforcing full height of walls.

All masonry units shall be placed with full face shell mortar coverage on horizontal and vertical face shells. Webs shall also have full mortar coverage around all grouted cells.

Fill block core at vertical reinforcing (8" minimum length along wall) with concrete grout. Filling cores with mortar is not allowed. Vibrate in place. Rodding and puddling are not allowed.

Maximum lift height is four feet. For concrete core fill pour height up to maximum 8'-0", provide cleanouts if pour height exceeds 5'-0".

Masonry cement mortar is not allowed.

Calcium chloride or admixtures containing chloride shall not be used in mortar or grout.

For reinforced masonry bond beams, provide bent corner bars at corners and intersections that match reinforcing. Step bond beams as necessary to match roof slopes. Lap reinforcing bars per schedule.

For construction of masonry control joints refer to detail in drawings.

Unless noted otherwise on the drawings place control joints in masonry walls such that no straight run of wall exceeds 24'-0" and within 4'-0" of corners. Do not place control joints within 48 inches of a masonry opening jamb or

Place bond beam reinforcing continuously through control joints. Do not splice bond beam reinforcing within 6'-0" of a control joint.

Provide bond beam with reinforcing at all floor lines, roof lines, and top of walls. Refer to details in the drawings. Grout below steel bearing plate and refer to the drawings for additional information.

Refer to drawings for reinforcing schedule, top of wall bracing, thickened bearing slab and lintel schedule for nonbearing masonry walls. Refer to Architectural drawings for location and extent.

MASONRY BEAMS (HIGH-LOW BOND BEAMS):

Masonry beams are to bear 8" minimum at jambs. Extend vertical reinforcing through masonry beam bearing.

Extend horizontal reinforcing full length.

For all masonry beams use lintel blocks.

Grout masonry beams solid. Mechanically vibrate grout in place.

EXPANSION AND ADHESIVE ANCHORS: Anchors in concrete or concrete masonry when not exposed to earth, weather, or corrosive environment

shall be as noted below: Expansion anchors shall be stud type with a single piece three section wedge

Types I, II, IV, and V, Grade 3, Classes B and C as noted on plans.

and zinc plated in accordance with ASTM B633.

Threaded anchor rod for adhesive anchors in concrete shall be ASTM A193, Grade B7, or ASTM A36, as noted in the drawings. The adhesive used for anchors shall be a structural grade, two part epoxy or acrylic material that meets the requirement of ASTM C-881

Holes shall be drilled with a bit and cleaned using a method that complies with the manufacturer's guidelines, and specifications. Do not cut or damage reinforcing steel or P-T tendons.

Upon the request of the structural engineer the anchors shall be proof tested by the manufacturer to verify capacity of anchors that do not meet the conditions in the construction documents.

Minimum embedment depths in concrete and concrete masonry for expansion and adhesive anchors shall be as noted below:

For 1/2", 5/8", and 3/4" diameter expansion anchors provide 4 3/4"embed, UNO on plan.

For 1/2" and 5/8" diameter adhesive anchors provide 5" embed. For 3/4" diameter adhesive anchors provide 7" embed, UNO on plan

Grouted solid concrete masonry unit material: For 1/2", 5/8", and 3/4" diameter expansion anchors provide 4 3/4"embed, UNO on plan.

For adhesive anchors refer to the product's ICBO Report. Pre-approved manufacturer are as follows: HILTI, ITWR Ramset/Redhead, Powers Fasteners, and Simpson Strong-Tie. For review of alternate products, submit manufacture's product data and product's current ICBO

report prior to construction. Anchors in concrete or concrete masonry when exposed to earth, weather, or corrosive environment shall be manufactured from AISI 304/316 Stainless Steel.

Structural steel shall be detailed, fabricated and erected in compliance with AISC Specification for the design, fabrication, erection of structural steel for building, and Code of standard practice, and OSHA steel erection standards.

All beams and girders shall be cambered at mid-span as indicated on the structural drawings. The cambers indicated shall be present in the beam in its erected position after completion of the end connections and shall be verified prior to placing concrete. Cambering tolerances shall be (-0", +1/4"). No center point cambering

Splicing structural members where not detailed on the drawings is prohibited without prior approval of the

Modification of structural steel members in the field is not allowed without written approval by the structural

All composite beams using the concrete slab as a compression flange are designed for unshored construction unless noted otherwise.

Anchor rods shall be minimum 3/4" diameter or as detailed in drawings.

STRUCTURAL STEEL CONNECTIONS:

All steel connections shall be designed by the steel fabricator for the criteria indicated on the drawings unless noted or detailed otherwise. Connection design shall conform to the requirements of the AISC Specifications for the design, fabrication, erection of structural and OSHA regulations. Submit calculations certified by a Professional Engineer who is licensed in the state of Minnesota. All loads indicated on the drawings are unfactored, working loads.

Non-composite beams: Unless noted otherwise, design simple beam shear connections per the AISC Manual connection tables. The required end reaction shall be based on the reactions indicated on the plans. Design connections for the reactions indicated on plan or for the minimum connection requirements indicated in the Connection Schedule, whichever provides the greater capacity.

Composite beams: Design simple composite beam shear connections per the AISC Manual connection tables UNO. Design connections for the reactions indicated on the plans or the minimum connection requirements indicated in the Connection Schedule, whichever provides the greater capacity.

Unless detailed otherwise, beam shop connections may be welded or bolted and field connections are to be bolted. Bolts shall be a minimum 3/4" diameter for connections specified or detailed in the drawings. The fabricator may submit an alternate connection with the calculations that is certified by a professional engineer

All beam web copes must be made to a 1 inch minimum radius.

Welded connections shall be made in accordance with ANSI/AWS D1.1 Structural Welding Code using E70XX electrodes unless noted otherwise. Weld sizes not shown or controlled by the required forces shall be AWS code minimum size. Welds shall be visually inspected for compliance with the AWS code visual inspection criteria. Welders shall be qualified in accordance with ANSI/AWS D1.1 and shall be experienced in weld in structural steel.

Full penetration welds shall be tested using NDT methods such as ultrasonic, magnetic particle or other methods referenced in the AWS code. Welds subject to NDT methods shall also have been found compliant with the AWS visual inspection criteria.

STRUCTURAL STEEL STAIRS:

Structural steel stair stringers, components, railings, posts, hangers, and connections to be designed by the fabricator's Qualified Professional Engineer for the loads indicated in the specifications. Configuration of stringers and railings shall be as indicated on the architectural drawings. Channel stringers to have a minimum 12" depth and a minimum 1 1/2" flange width.

STEEL ROOF DECK: Manufacturer shall be a current member of the Steel Deck Institute (SDI).

Detail, manufacture and install steel roof deck and accessories in accordance with the SDI specifications and codes and OSHA requirements. Steel roof deck shall be as noted on plan.

Welding shall be in accordance with AWS D1.3. Welders shall be qualified in accordance with AWS D1.3.

with the proposed fireproofing material to ensure proper bonding of the fireproofing. Coordinate fireproofing locations and requirements with the architect.

Where spray-on fireproofing of the deck is required, the contractor shall verify that the deck finish is compatible

All steel deck shall span a minimum of three spans, unless otherwise approved by the engineer. Deck ends are to

Contractor shall verify the location and extent of acoustical steel deck with the architectural drawings. Reference drawings for detail on steel roof deck fastening requirements unless noted otherwise. Powder actuated or pneumatically driven fasteners are not allowed.

Provide reinforcement or frames for deck openings as indicated on the drawings.

LIMITATIONS ON M/E SUPPORT FROM PRIMARY STRUCTURE: All M/E systems shall be supported from the primary structural frame, unless noted otherwise. Do not connect to

roof deck, floor slabs, or secondary members unless specifically allowed on the structural construction

All M/E support systems, hangers, brackets and connections to the primary structural frame shall be designed, provided and installed by the M/E contractor, unless noted otherwise on the structural construction documents. All M/E supports and connections for loads in excess of 300 lbs shall be designed by a structural engineer licensed

in the state of Minnesota and engaged by the M/E contractor.

COMPOSITE STEEL FLOOR DECK: Manufacturer shall be a current member of the Steel Deck Institute (SDI). Composite steel floor deck shall be as noted on plan.

Detail, manufacture and install composite steel floor deck and accessories in accordance with the SDI

specifications, codes and OSHA steel erection standards. Refer to drawings for composite steel floor deck fastening requirements unless noted otherwise. Powder actuated or pneumatically driven fasteners are not allowed.

Provide and install pour stops, column closures, end closures, cover plates and girder fillers and other accessories as required by the SDI unless otherwise indicated or detailed.

Where spray-on fireproofing of the deck is required, the contractor shall verify that the deck finish is compatible with the proposed fireproofing material to ensure proper bonding of the fireproofing. Coordinate fireproofing locations and requirements with the architect.

Provide reinforcement or frames for deck openings as indicated on the drawings.

Do not cut control joints in structural slabs on metal deck.

IMPROVING YOUR WORLD

Reynolds, Smith and Hills, Inc.

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DULUTH INTERNATIONAL **AIRPORT** DULUTH, MN

NEW TERMINAL DESIGN

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Structural Engineers: MBJ CONSULTING ENG. 501 Lake Avenue South, Suite 300, Duluth MN 55802 TEL: (218) 722-1056 / FAX: (218) 722-9306

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly

Print Name: Paul A. Johnson

laws of the State of Minnesota.

licensed Professional Engineer under the

Reg. No.: 20379

Date: June 3, 2010

REVISIONS NO. DESCRIPTION DATE 1 Addendum 1 06-10-10 Conformance Set 07-12-10

DATE ISSUED: 07-12-10 **REVIEWED BY:** PAJ / CWB DRAWN BY: SJL

DESIGNED BY: CWB

AEP PROJECT NUMBER 213-1882-091 (C) 2009 REYNOLDS, SMITH AND HILLS INC

SHEET TITLE **GENERAL**

SHEET NUMBER

NON-COMPOSITE STEEL FLOOR DECK:

Manufacturer shall be a current member of the Steel Deck Institute (SDI).

Non-composite steel floor deck shall be as noted on plan.

Detail, manufacture and install non-composite steel floor deck and accessories in accordance with the SDI specifications and codes and OSHA steel erection standards.

Refer to drawings for non-composite steel floor deck fastening requirements. Powder actuated or pneumatically driven fasteners are not allowed.

Where spray-on fireproofing of the deck is required, the contractor shall verify that the deck finish is compatible with the proposed fireproofing material to ensure proper bonding of the material. Coordinate locations and requirements with the architect.

Provide reinforcement or frames for deck openings as indicated on the drawings.

LIGHT GAUGE METAL FRAMING:

The design and connection detailing of all light gage material including, but not limited to exterior studs, bearing studs, headers, jambs, joists, rafters and anchorage shall be by the Light Gauge Supplier. The design for systems other than bearing framing shall meet the following criteria:

Stud in exterior walls shall be minimum 600S162-43 (6"-18 gauge) studs at 16" OC. See architectural for additional spacing requirements at exterior finishes.

Studs shall be cold rolled steel, galvanized, C shape, with minimum 1 5/8" flange and minimum 1/2" return. They are to be punched for utility access and galvanized to G60 coating per ASTM 525.

At all openings in exterior and bearing walls provide a minimum two studs full wall height each side of opening and a minimum one additional stud each side for lintel bearing.

Anchor bottom track to concrete or masonry with minimum 5/32" x 1 1/4" power driven fasteners at 16" OC.

Top and bottom tracks shall be cold rolled or break formed steel, galvanized U shaped and minimum

18 gauge and as noted on the drawings.

Light gauge metal framing fasteners shall be minimum #10 self-drilling sheet metal screws, 16 threads per inch, with low profile head. Provide a minimum of two screws per connection unless noted

otherwise.

Fasten light gage framing to wood with minimum #10 x 1 7/8" bugle head wood screws. Pre-drill holes

in metal studs. Provide a minimum of two screws per connection unless noted otherwise.

All framing components shall be squarely cut for attachment to perpendicular members. Stud ends must

seat tightly into tracks for all bearing applications.

At all wall elements, provide 1 1/2"-16 gauge horizontal channel bridging to prevent stud rotation. For all axial loaded walls, space bridging at 4'-0" OC. For all non-load bearing exterior walls, space bridging at 5'-0" OC.

Wall stud deflection criteria:

For wall studs providing lateral support to masonry veneer and cementitious stucco, provide L/600.

For wall studs providing lateral support to other materials, provide L/360.

Joist and rafter deflection criteria:

Live Load Deflection is L/360.

Total Load Deflection is L/240.

An additional joist shall be provided under parallel non-load bearing partition walls.

The light gauge supplier shall submit certified shop drawings and design calculations prepared by a qualified Professional Engineer registered in the state of Minnesota. See project specification manual for additional submittal requirements.

All light gauge designations are in accordance with the Steel Stud Manufacturers Association (SSMA).

Refer to architectural drawings and specification for size, minimum gage, extent, and location of interior non-bearing light gage framing not shown on the structural drawings. Interior light gauge framing is to be designed for 5 psf lateral pressure by the light gauge supplier.

Temporary bracing shall be furnished by the light gauge supplier and framing installer and maintained until permanent systems providing lateral stability are in place.

Welding shall conform to the American Welding Society (AWS) "Structural Welding Code - Sheet Steel, D1.3 - Current Edition." Welders shall be qualified in accordance with AWS D1.3 and shall be experienced in light gage welding.

All light gage material to be welded must be nominal 16 gauge or thicker.

Touch up all light gage material at welds with zinc-rich paint.

Align load bearing wall studs with floor or roof joists.

Splices in studs, joists, and headers, are not permitted, unless approved in writing by the structural engineer.

Framing components may be pre-assembled into panels prior to erecting. Prefabricated panels shall be square, with components attached in a manner that prevents racking.

SPECIAL INSPECTION SCHEDULE:

SPECIAL INSPECTIONS REQUIRED OF STRUCTURAL ELEMENTS (PER IBC 2006, CHAPTER 17):

1 Stool *	Continuous	Periodic	Not Req'd	See Arch.	T-bl- 4704.0
1. 3(86)		_	_	_	Table 1704.3
1.1 Welding					
1.2 Details					
1.3 High-strength Bolts					T-51- 4704 4
2. Concrete	_	_	_	_	Table 1704.4
2.1 Reinforcing steel including Prestressing tendons					
2.2 Bolts installed in concrete	_				
2.3 Required design mix	_		H	H	
2.4 Sampling			H		
2.5 Shotcrete	_				
2.6 Curing techniques	H			H	
2.7 Prestressed concrete					
forces and grouting			-		
2.8 Erection of precast					
concrete members					
2.9 Verification of IN-SITU concrete strength					
3. Masonry					
3.1 Level 1 Special Inspection *					1704.5.1,
	_		_	_	1704.5.2,
					Table 1704.5.
3.2 Level 2 Special Inspection					1704.5.3, Table 1704.5.3
4. Wood	П			П	1704.6
5. Soils		ī	\Box		1704.7
6. Pile Foundations					1704.8
7. Pier Foundations					1704.9
8. Wall Panel and Veneers					1704.10
9. Sprayed Fire-Resistant Materials					1704.11
Exterior Insulation and Finish Systems (EIFS)					1704.12
11. Special Cases					1704.13
12. Smoke Control Systems					1704.14
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^{*} Please see referenced tables for exceptions.



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DULUTH AIRPOR AUTHORITY

DULUTH INTERNATIONAL AIRPORT DULUTH, MN

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Landscape Consultants:

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laws of the State of Minnesota.

licensed Professional Engineer under the

Print Name: Paul A. Johnson

Date: June 3, 2010 Reg. No.: 20379

REVISIONS

NO. DESCRIPTION DATE

Conformance Set 07-12-10

DATE ISSUED: 07-12-10

REVIEWED BY: PAJ / CWB

DRAWN BY: SJL
DESIGNED BY: CWB

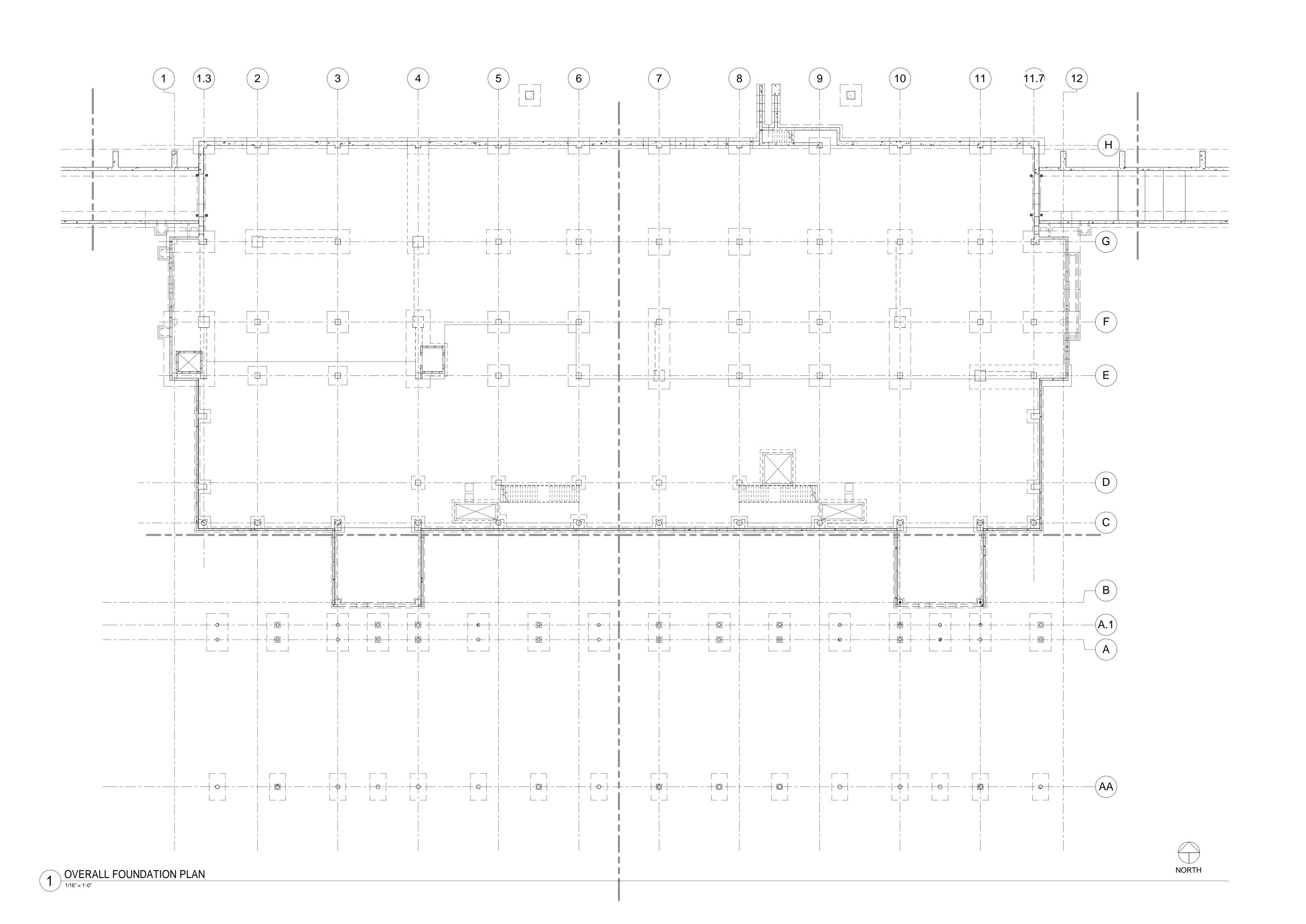
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SHEET TITLE

GENERAL STRUCTURAL NOTES

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t Name: Paul A. Johnson

Signature: Tall Affine

Date: June 3, 2010 Reg. No.: 20379

REVISIONS

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DRAWN BY: SJL

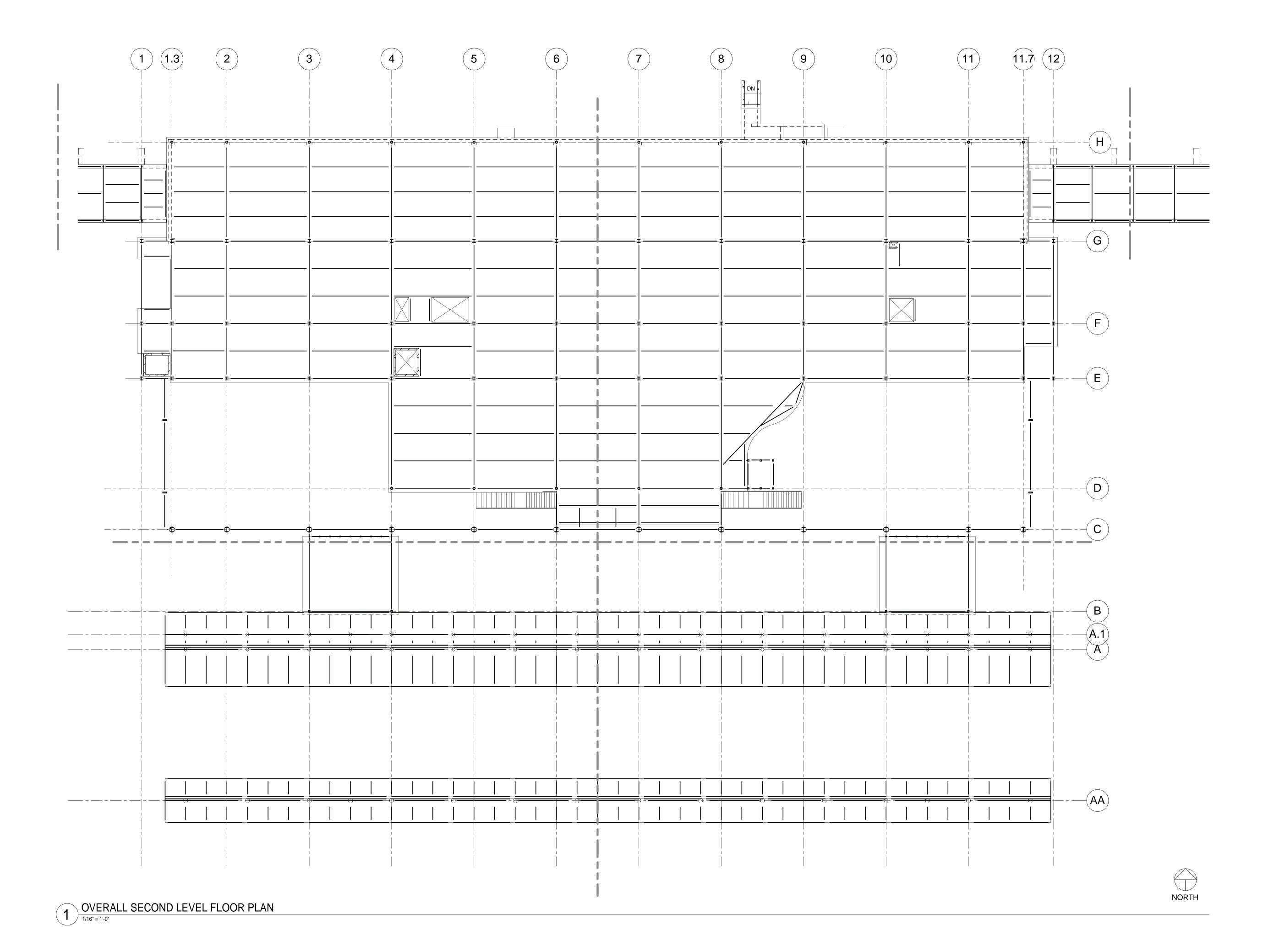
DESIGNED BY: CWB

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OVERALL FIRST
LEVEL FLOOR
PLAN

SHEET NUMBER **S101**





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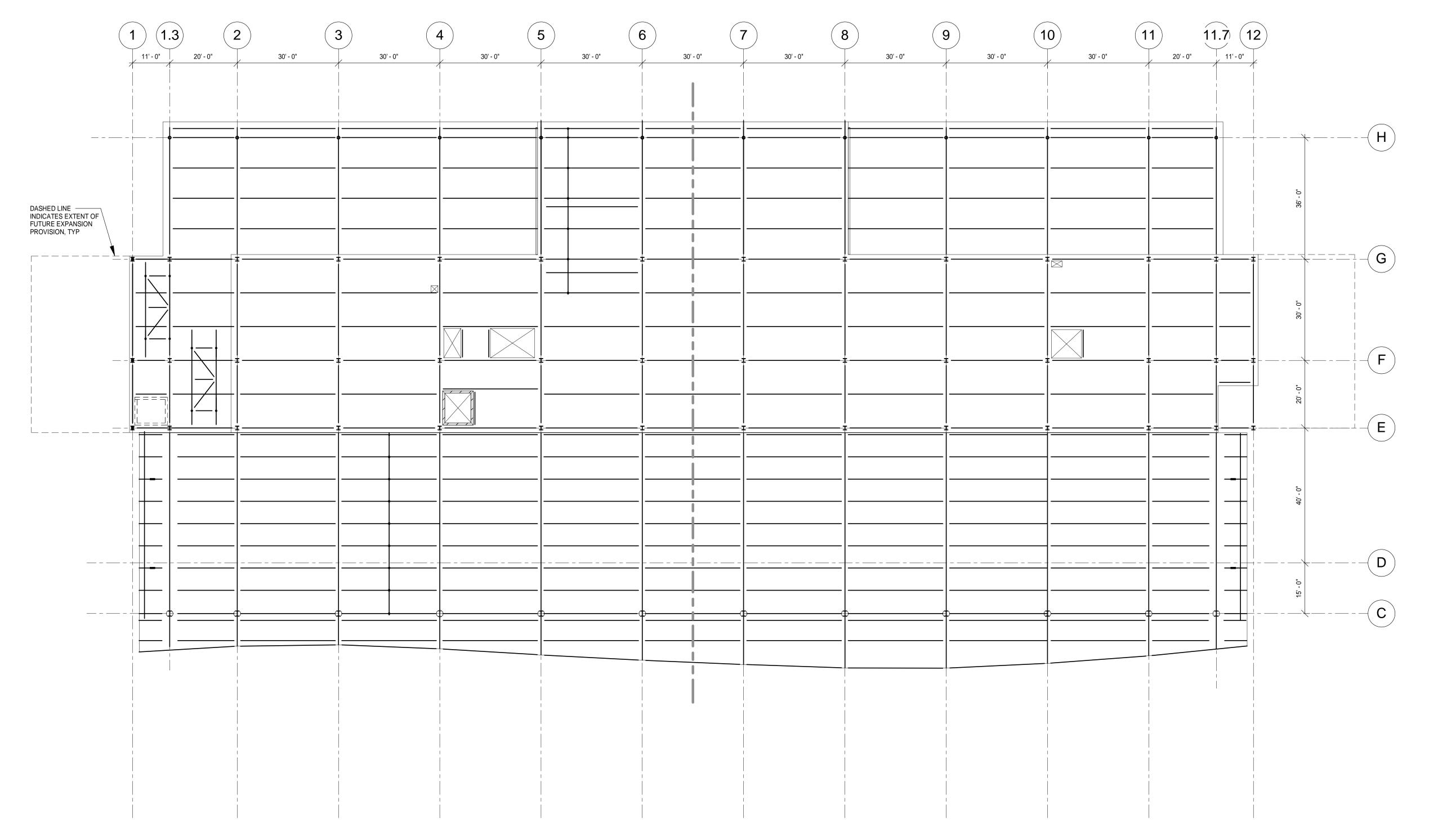
AEP PROJECT NUMBER

213-1882-091

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OVERALL
SECOND LEVEL
FLOOR PLAN

SHEET NUMBER S102



NORTH





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DULUTH INTERNATIONAL AIRPORT DULUTH, MN

NEW TERMINAL DESIGN

CONSULTANTS

Interior Architects:

SJA ARCHITECTS

11 E Superior Street Suite 340 Duluth MN 55802
TEL: (218) 724-8578 / FAX: (218) 724-8717

Structural Engineers:

MBJ CONSULTING ENG.

501 Lake Avenue South, Suite 300, Duluth MN 55802
TEL: (218) 722-1056 / FAX: (218) 722-9306

M/E/P/FP Engineers: COSENTINI

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Baggage Handling Systems Consultants: BNP ASSOCIATES INC. 101 East Ridge Office Park, Suite 103, Danbury CT 06810 TEL: (203) 792-3000 / FAX: (203) 792-4900

Landscape Consultants:

APPOLD DESIGN

2432 East First Street, Duluth MN 55812

TEL: (218) 591-5079

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.

Name: Paul A. Johnson

Date: June 3, 2010 Reg. No.: 20379

REVISIONS

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DRAWN BY: SJL

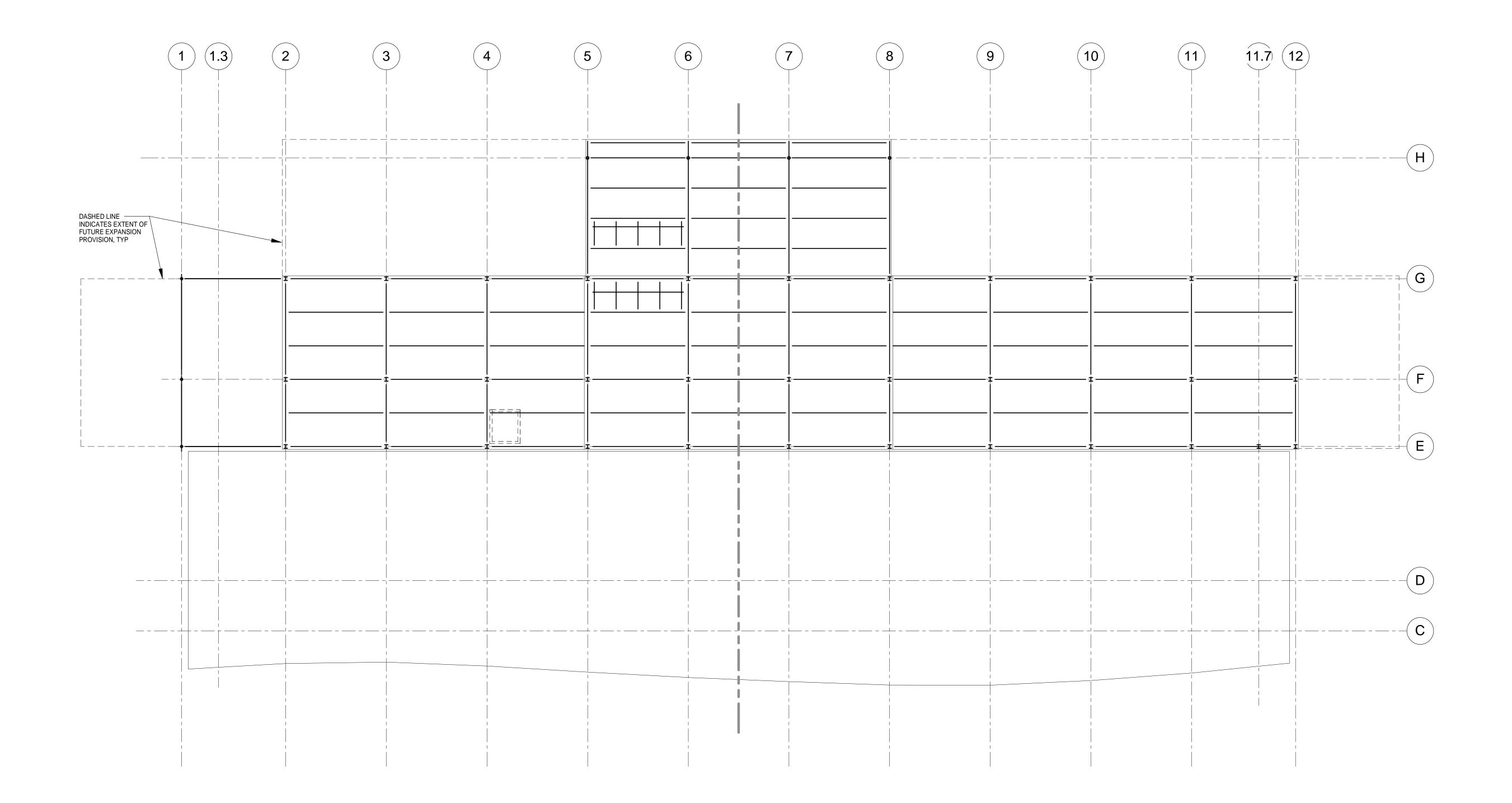
DESIGNED BY: CWB

AEP PROJECT NUMBER

213-1882-091
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OVERALL THIRD LEVEL FLOOR PLAN

SHEET NUMBER S103









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DULUTH INTERNATIONAL AIRPORT DULUTH, MN

NEW TERMINAL DESIGN

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Signature: 7 all (1/phm)

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DRAWN BY: SJL

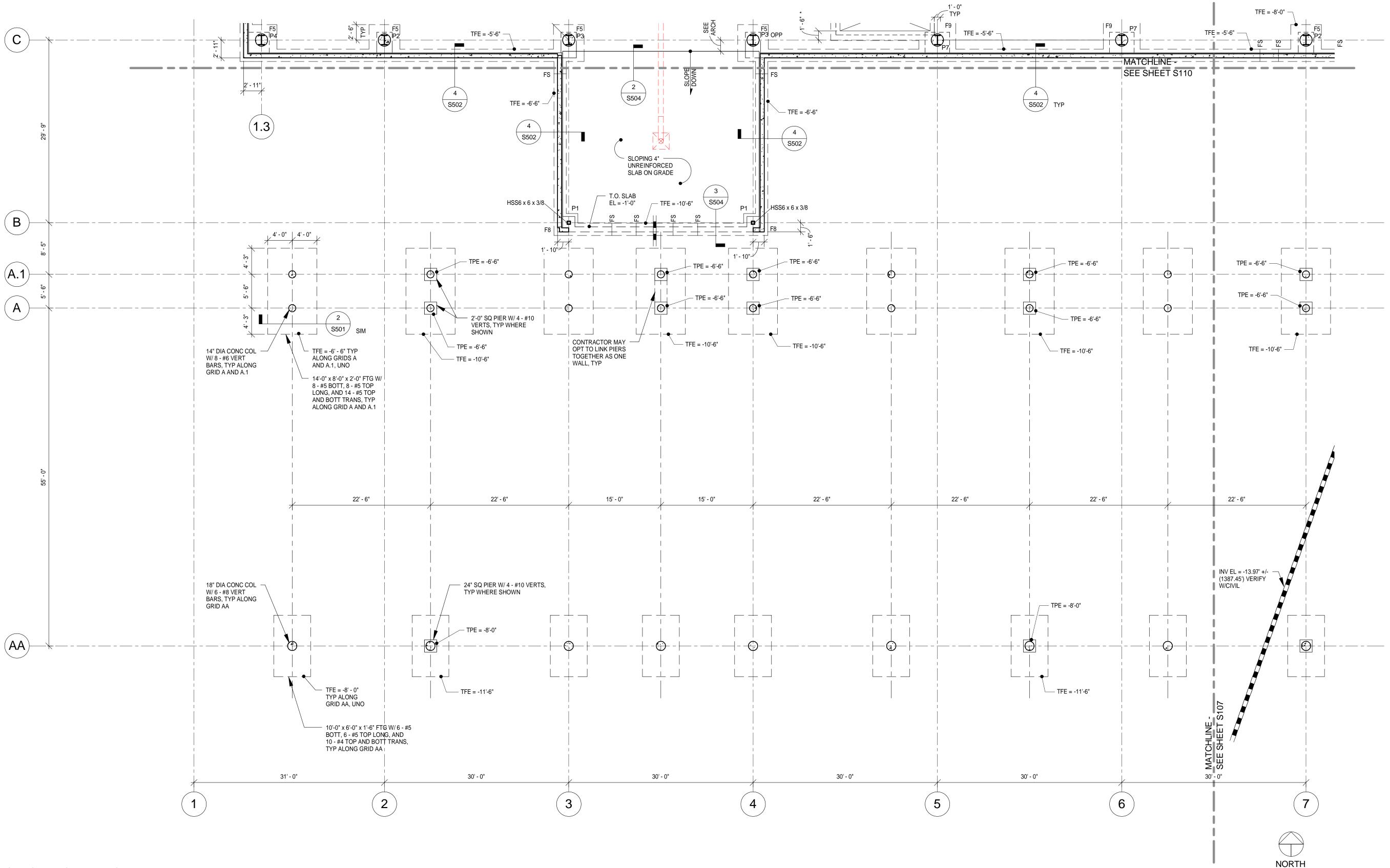
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AEP PROJECT NUMBER 213-1882-091

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OVERALL ROOF LEVEL PLAN

SHEET NUMBER S104



CANOPY FOUNDATION PLAN - AREA A

NOTES:

1. REFER TO S110 FOR TYPICAL PLAN NOTES.



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DULUTH INTERNATIONAL AIRPORT DULUTH, MN

NEW TERMINAL DESIGN

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Signature: 7 all (1/phonon

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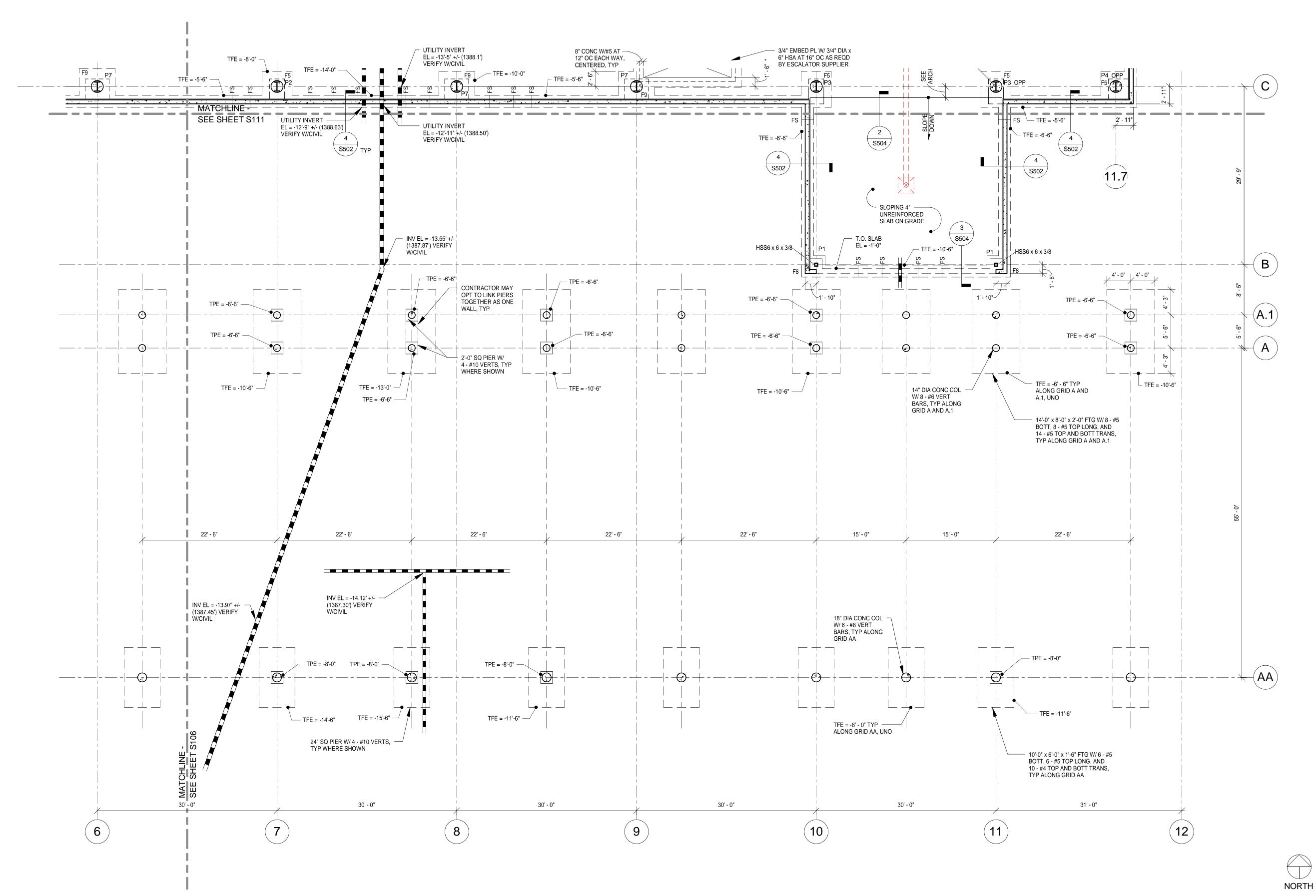
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CANOPY
FOUNDATION
PLAN - AREA A

SHEET NUMBER S106



CANOPY FOUNDATION PLAN - AREA B

NOTES:
1. REFER TO S110 FOR TYPICAL PLAN NOTES.



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DULUTH, MN

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Signature. | Wee Or provide

Date: June 3, 2010 Reg. No.: 20379

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DRAWN BY: SJL

DESIGNED BY: CWB

AEP PROJECT NUMBER

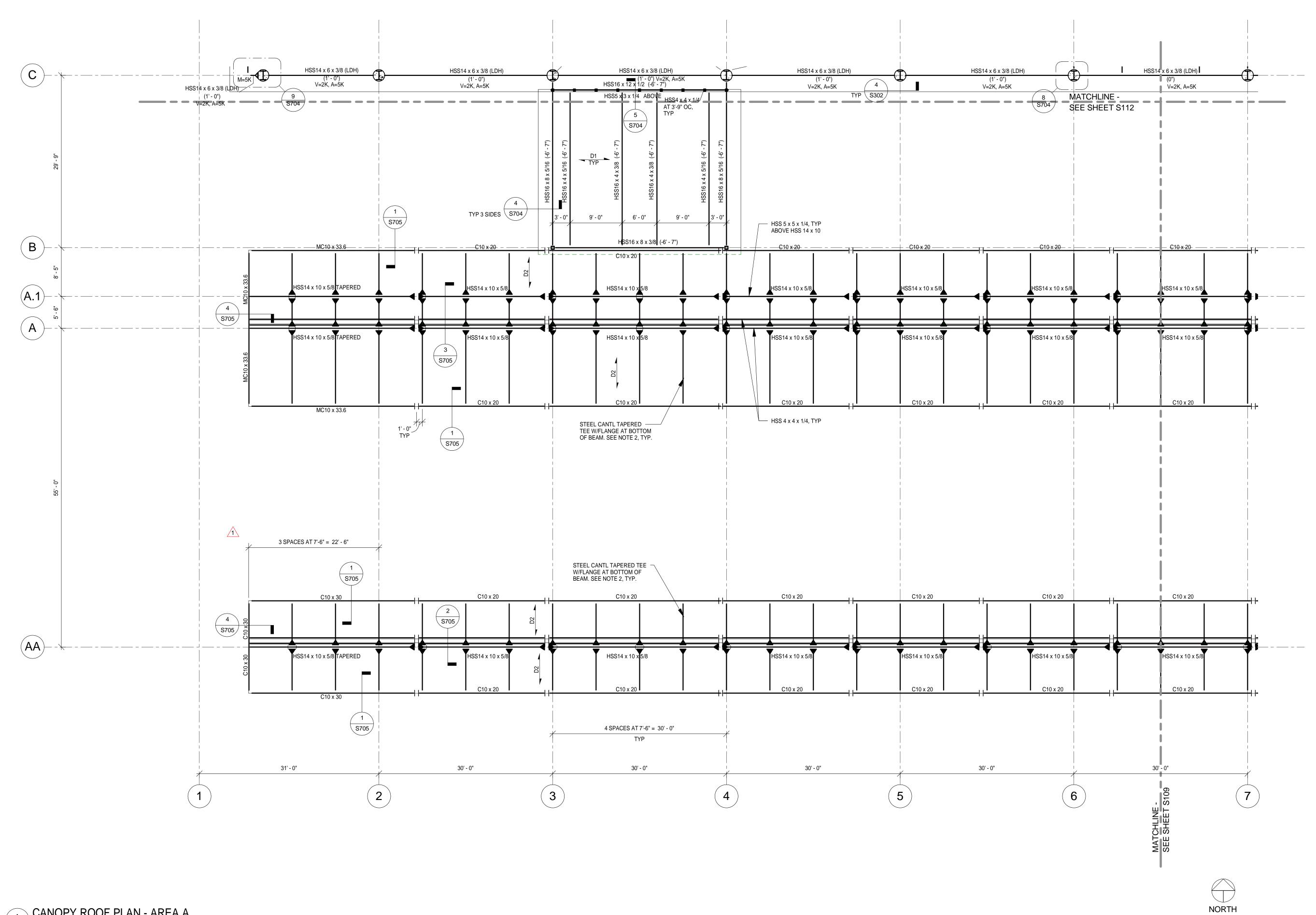
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SHEET TITLE
CANOPY
FOUNDATION

PLAN - AREA B

SHEET NUMBER **S107**



CANOPY ROOF PLAN - AREA A

NOTES:

1. REFER TO S115 FOR TYPICAL PLAN NOTES.

2. FABRICATOR TO PROVIDE SECTION (BUILT UP PLATE SECTION OR CUT WT OR CUT WIDE

FLANGE) WITH THE FOLLOWING DIMENSIONAL PROPERTIES:

d max = 14" d min = 6" bf = 12"

tf = 1 3/8" tw = 3/4"

Fy = 50 ksi



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DULUTH INTERNATIONAL **AIRPORT** DULUTH, MN

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	Conformance Set	07-12-1

REVIEWED BY: PAJ / CWB DRAWN BY: SJL **DESIGNED BY:** CWB

DATE ISSUED: 07-12-10

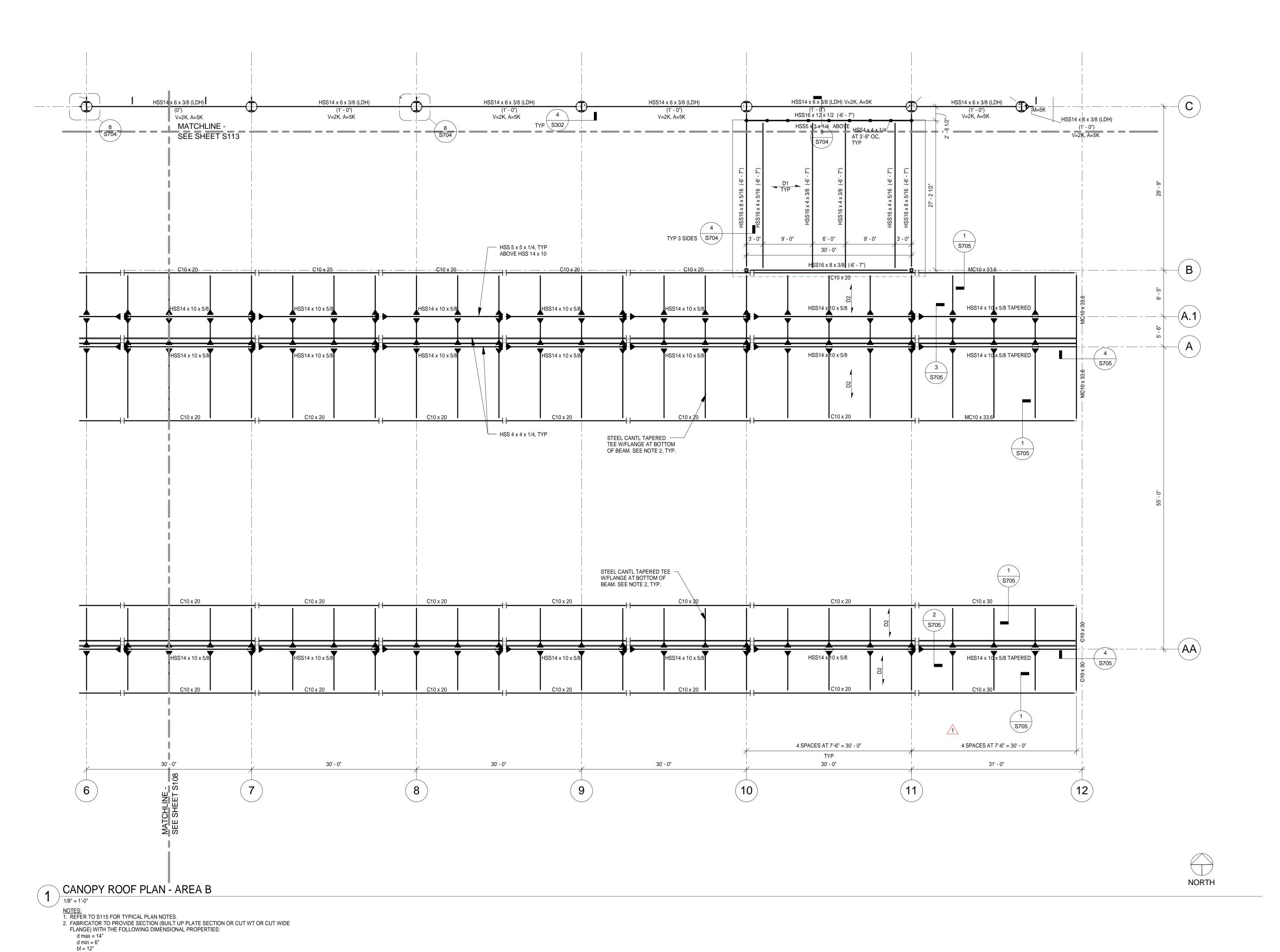
AEP PROJECT NUMBER

213-1882-091

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CANOPY ROOF FRAMING PLAN -**AREA A**

> SHEET NUMBER **S108**



tf = 1 3/8" tw = 3/4"

Fy = 50 ksi

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NEW TERMINAL DESIGN

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Paul A. Johnson

Date: June 3, 2010 Reg. No.: 20379

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DESIGNED BY: CWB AEP PROJECT NUMBER

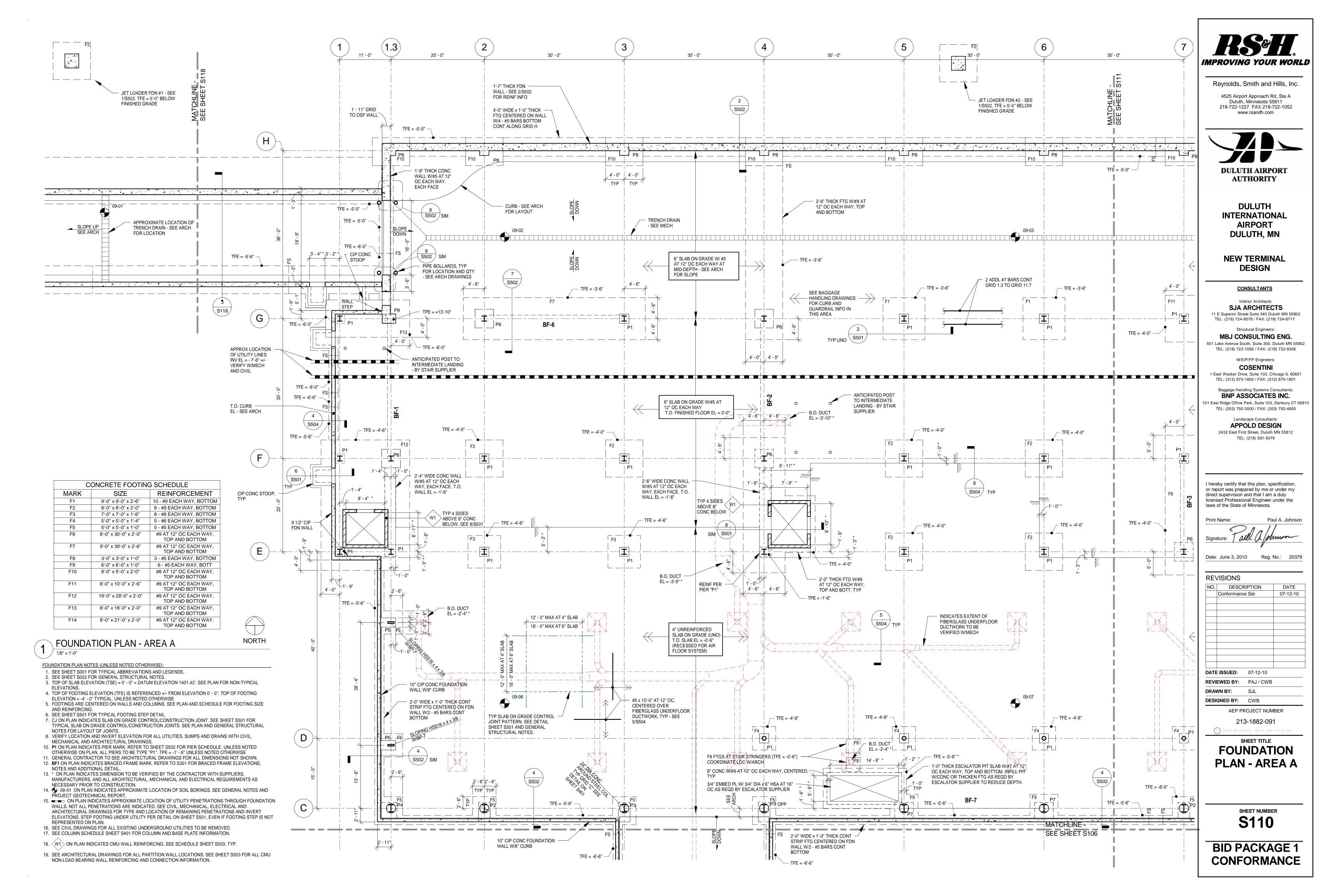
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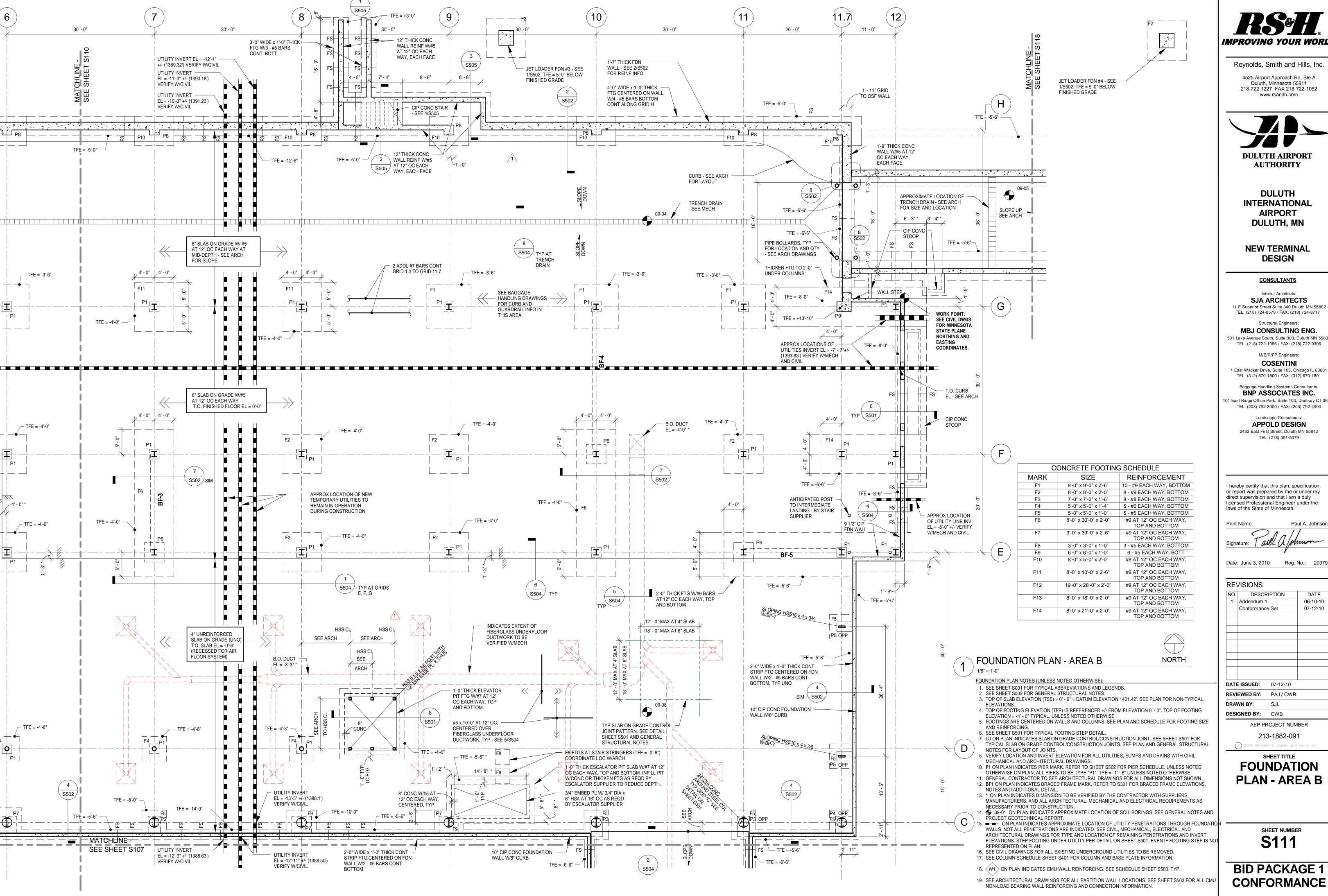
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SHEET TITLE **CANOPY ROOF** FRAMING PLAN -

AREA B

SHEET NUMBER **S109**





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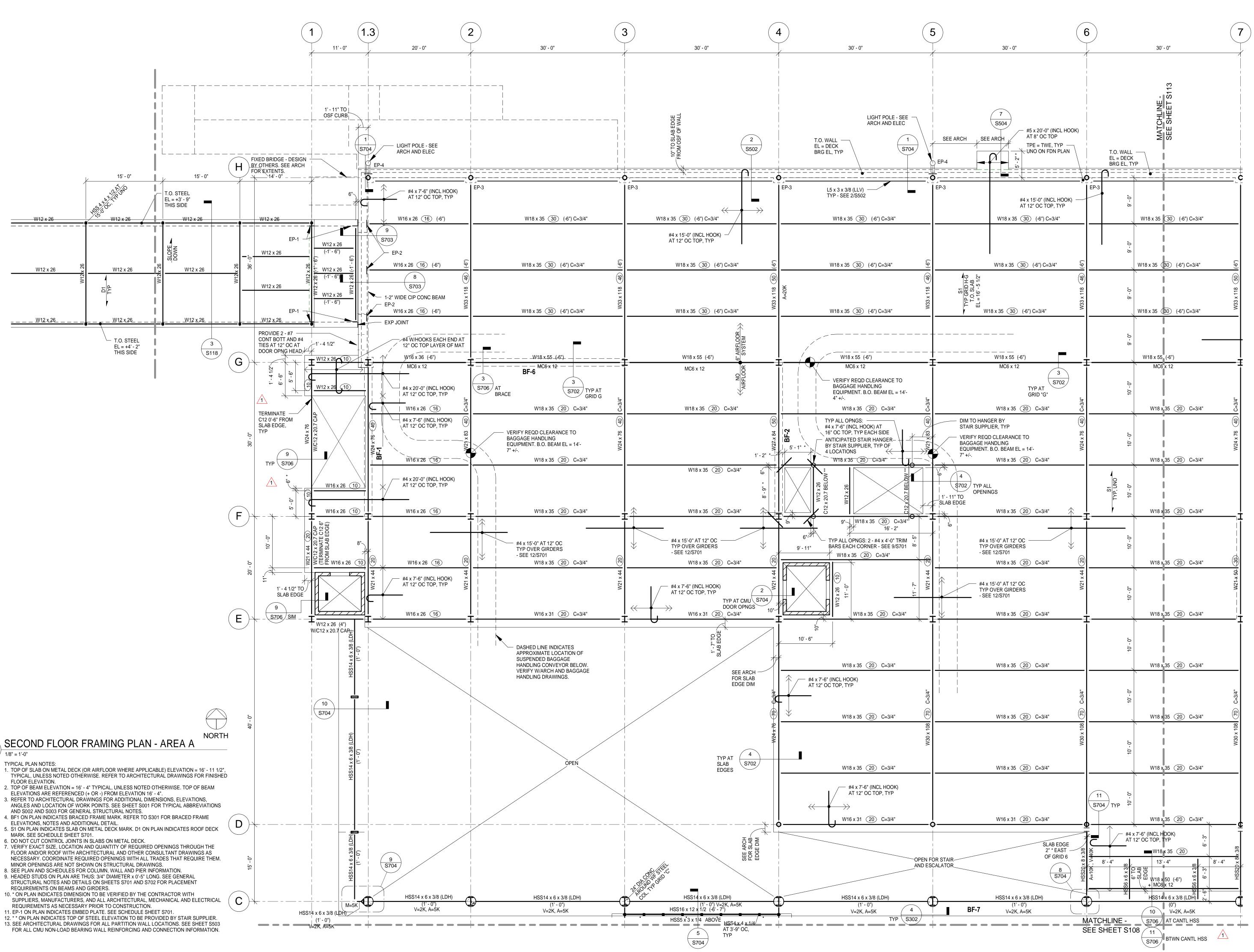
licensed Professional Engineer under the Paul A. Johnson

Date: June 3, 2010 Reg. No.: 20379

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PLAN - AREA B

BID PACKAGE 1





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DULUTH INTERNATIONAL **AIRPORT** DULUTH, MN

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Landscape Consultants: APPOLD DESIGN 2432 East First Street, Duluth MN 55812 TEL: (218) 591-5079

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Signature:

Date: June 3, 2010 Reg. No.: 20379

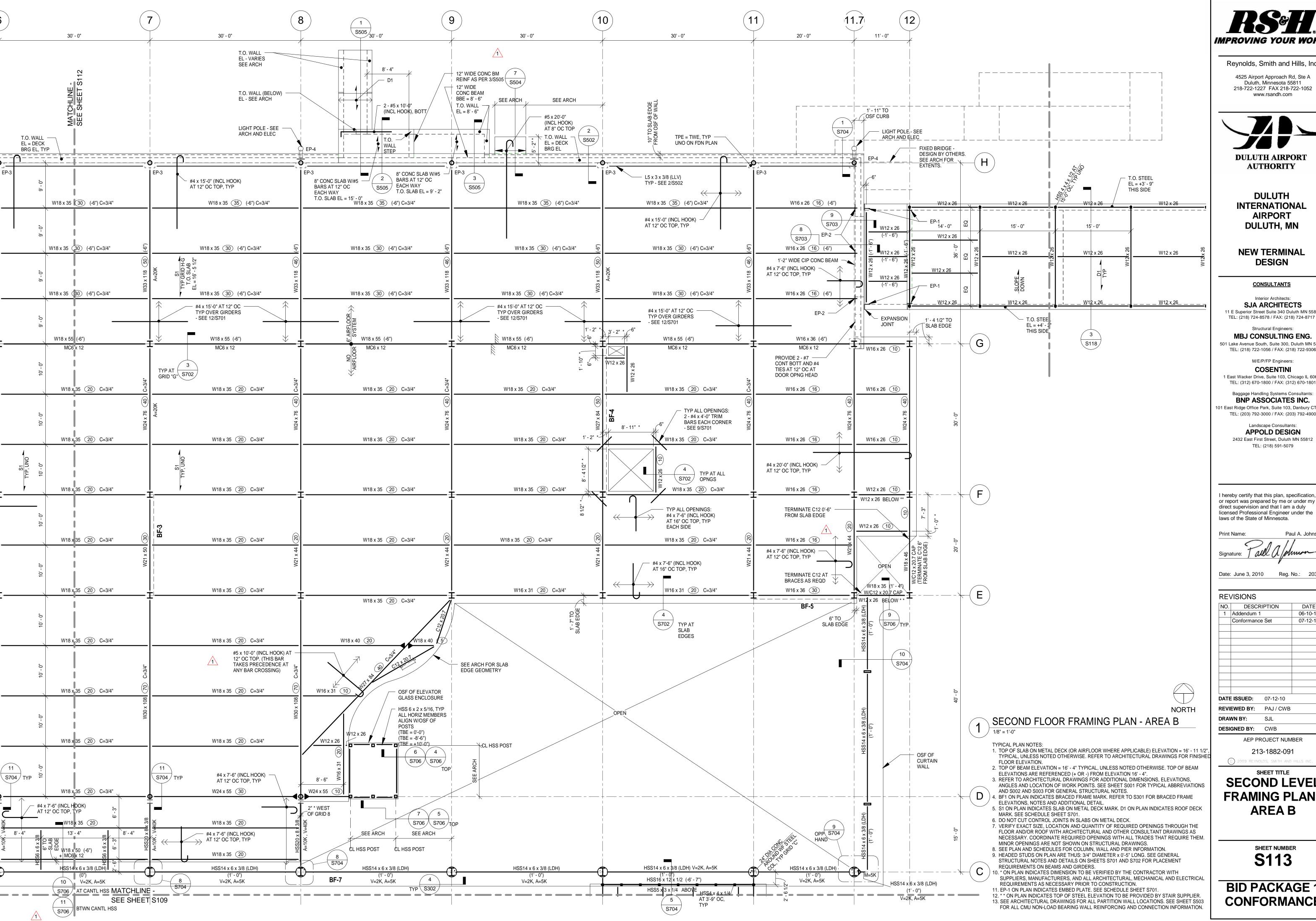
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DESI	GNED BY:	CWB	

AEP PROJECT NUMBER 213-1882-091 (C) 2009 REYNOLDS, SMITH AND HILLS INC.

SHEET TITLE

SECOND LEVEL FRAMING PLAN -**AREA A**

> SHEET NUMBER **S112**



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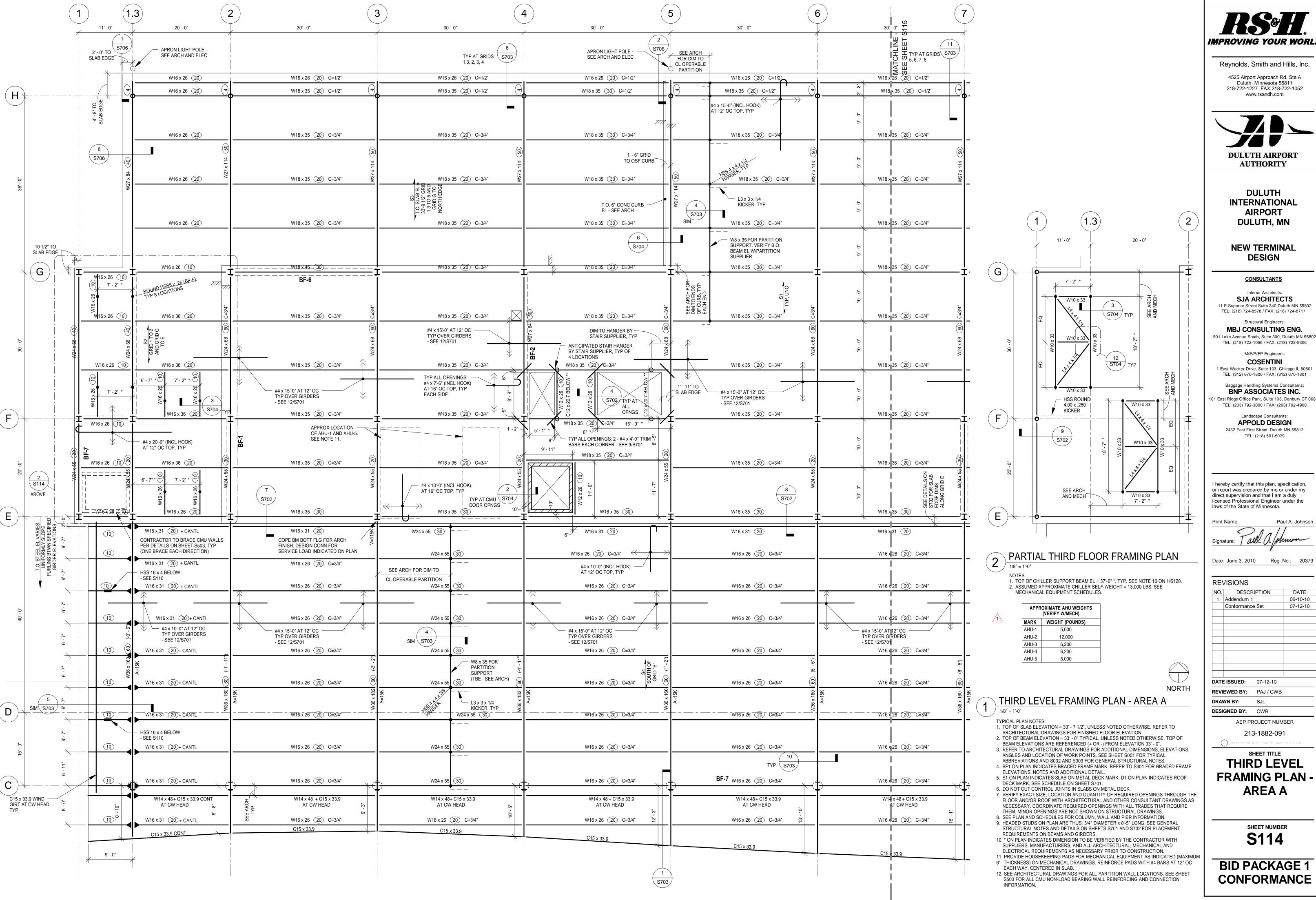
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07-12-1

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213-1882-091

SHEET TITLE **SECOND LEVEL** FRAMING PLAN -

S113



C



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INTERNATIONAL

NEW TERMINAL

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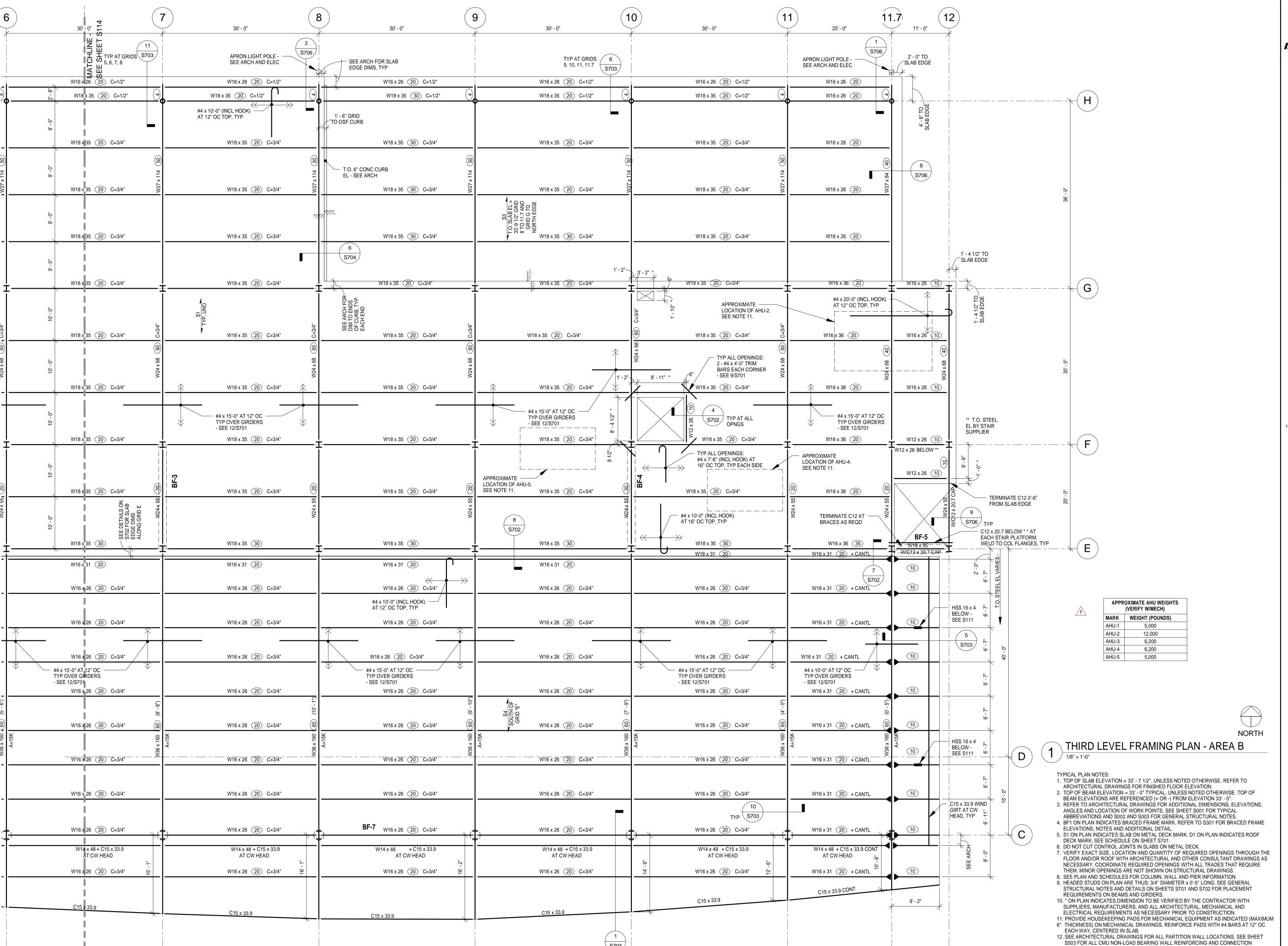
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Paul A. Johnson

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NO.	DESCRIPTION	DATE				
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THIRD LEVEL FRAMING PLAN -

BID PACKAGE 1





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Signature:) Will () ()

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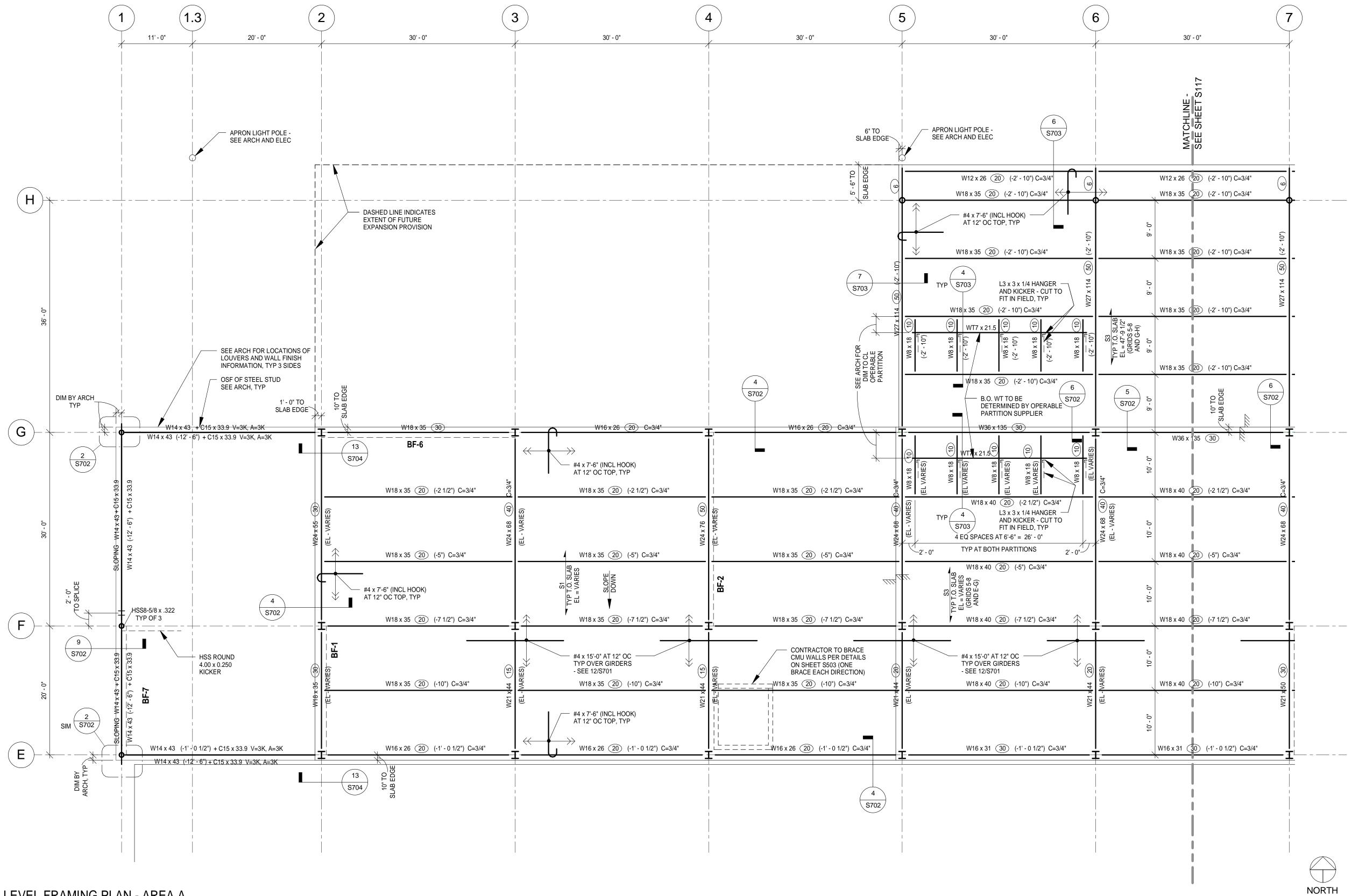
THIRD LEVEL

FRAMING PLAN -AREA B

SHEET NUMBER
S115

BID PACKAGE 1 CONFORMANCE

INFORMATION.



ROOF LEVEL FRAMING PLAN - AREA A (1) ROUF 1/8" = 1'-0"

TYPICAL PLAN NOTES:

1. TOP OF STEEL BEAM ELEVATION IS REFERENCED (+ OR -) FROM ELEVATION 49' - 6".

TOP OF STEEL BEAM = 49' - 6", UNLESS NOTED OTHERWISE. 2. TOP OF SLAB ELEVATION VARIES. SEE PLAN

3. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL DIMENSIONS, ELEVATIONS, ANGLES AND LOCATION OF WORK POINTS. SEE SHEET S001 FOR TYPICAL

ABBREVIATIONS AND S002 AND S003 FOR GENERAL STRUCTURAL NOTES. 4. BF1 ON PLAN INDICATES BRACED FRAME MARK. REFER TO S301 FOR BRACED FRAME

ELEVATIONS, NOTES AND ADDITIONAL DETAIL. 5. S1 ON PLAN INDICATES SLAB ON METAL DECK MARK. D1 ON PLAN INDICATES ROOF

DECK MARK. SEE SCHEDULE ON SHEET S701.

6. DO NOT CUT CONTROL JOINTS IN SLABS ON METAL DECK. 7. VERIFY EXACT SIZE, LOCATION AND QUANTITY OF REQUIRED OPENINGS THROUGH THE FLOOR AND/OR ROOF WITH ARCHITECTURAL AND OTHER CONSULTANT DRAWINGS AS NECESSARY. COORDINATE REQUIRED OPENINGS WITH ALL TRADES THAT REQUIRE

THEM. MINOR OPENINGS ARE NOT SHOWN ON STRUCTURAL DRAWINGS. 8. SEE PLAN AND SCHEDULES FOR COLUMN, WALL AND PIER INFORMATION.

9. HEADED STUDS ON PLAN ARE THUS: 3/4" DIAMETER x 0'-5" LONG. SEE GENERAL

REQUIREMENTS ON BEAMS AND GIRDERS.

10. * ON PLAN INDICATES DIMENSION TO BE VERIFIED BY THE CONTRACTOR WITH SUPPLIERS, MANUFACTURERS, AND ALL ARCHITECTURAL, MECHANICAL AND ELECTRICAL REQUIREMENTS AS NECESSARY PRIOR TO CONSTRUCTION.

STRUCTURAL NOTES AND DETAILS ON SHEETS S701 AND S702 FOR PLACEMENT

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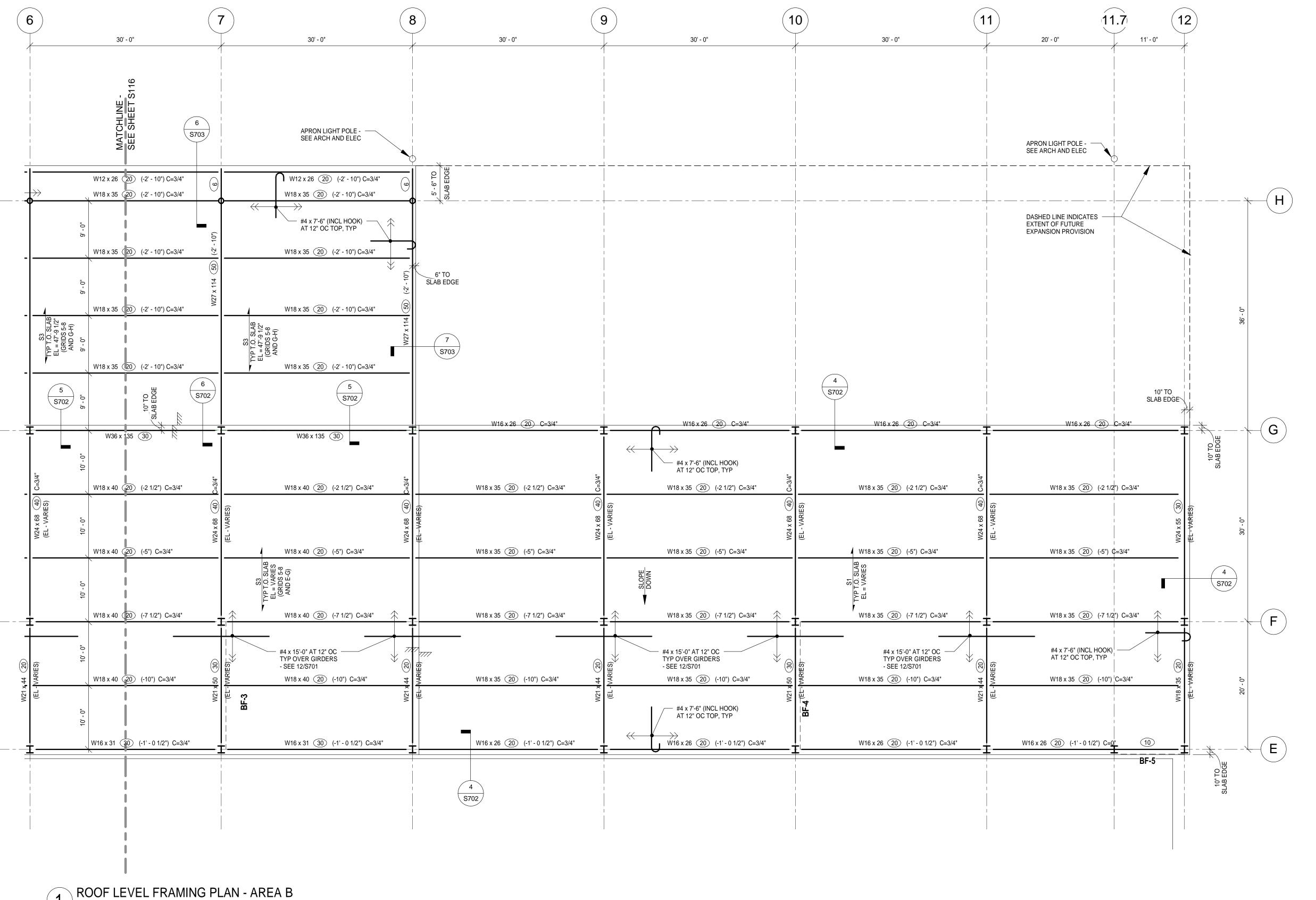
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SHEET TITLE

ROOF LEVEL FRAMING PLAN -**AREA A**

> SHEET NUMBER **S116**



NORTH

1. TOP OF STEEL BEAM ELEVATION IS REFERENCED (+ OR -) FROM ELEVATION 49' - 6".

TOP OF STEEL BEAM = 49' - 6", UNLESS NOTED OTHERWISE.

2. TOP OF SLAB ELEVATION VARIES. SEE PLAN 3. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL DIMENSIONS, ELEVATIONS,

ANGLES AND LOCATION OF WORK POINTS. SEE SHEET S001 FOR TYPICAL ABBREVIATIONS AND S002 AND S003 FOR GENERAL STRUCTURAL NOTES.

4. BF1 ON PLAN INDICATES BRACED FRAME MARK. REFER TO \$301 FOR BRACED FRAME ELEVATIONS, NOTES AND ADDITIONAL DETAIL.

5. S1 ON PLAN INDICATES SLAB ON METAL DECK MARK. D1 ON PLAN INDICATES ROOF

DECK MARK. SEE SCHEDULE ON SHEET S701. 6. DO NOT CUT CONTROL JOINTS IN SLABS ON METAL DECK.

7. VERIFY EXACT SIZE, LOCATION AND QUANTITY OF REQUIRED OPENINGS THROUGH THE FLOOR AND/OR ROOF WITH ARCHITECTURAL AND OTHER CONSULTANT DRAWINGS AS NECESSARY. COORDINATE REQUIRED OPENINGS WITH ALL TRADES THAT REQUIRE THEM. MINOR OPENINGS ARE NOT SHOWN ON STRUCTURAL DRAWINGS.

8. SEE PLAN AND SCHEDULES FOR COLUMN, WALL AND PIER INFORMATION. 9. HEADED STUDS ON PLAN ARE THUS: 3/4" DIAMETER x 0'-5" LONG. SEE GENERAL

STRUCTURAL NOTES AND DETAILS ON SHEETS S701 AND S702 FOR PLACEMENT REQUIREMENTS ON BEAMS AND GIRDERS.

10. * ON PLAN INDICATES DIMENSION TO BE VERIFIED BY THE CONTRACTOR WITH SUPPLIERS, MANUFACTURERS, AND ALL ARCHITECTURAL, MECHANICAL AND ELECTRICAL REQUIREMENTS AS NECESSARY PRIOR TO CONSTRUCTION.

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Structural Engineers: MBJ CONSULTING ENG. 501 Lake Avenue South, Suite 300, Duluth MN 55802 TEL: (218) 722-1056 / FAX: (218) 722-9306

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Print Name: Paul A. Johnson

Date: June 3, 2010 Reg. No.: 20379

DEVISIONS

REVISIONS				
NO	. DESCRIPTION	DATE		
	Conformance Set	07-12-1		
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DATE ISSUED: 07-12-10 **REVIEWED BY:** PAJ / CWB

DRAWN BY: SJL

DESIGNED BY: CWB

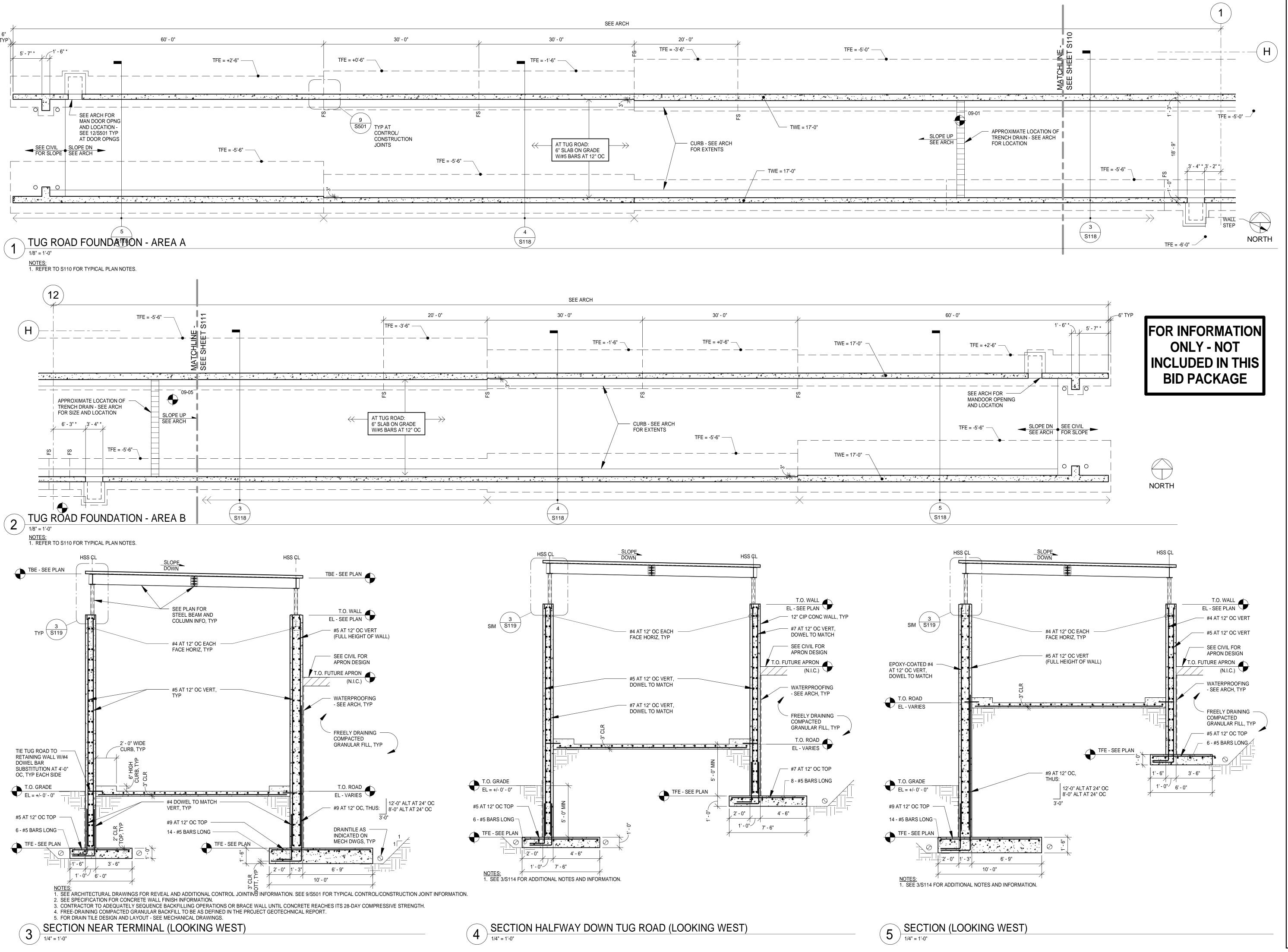
AEP PROJECT NUMBER

213-1882-091 C) 2009 REYNOLDS, SMITH AND HILLS INC.

SHEET TITLE

ROOF LEVEL FRAMING PLAN -**AREA B**

SHEET NUMBER **S117**



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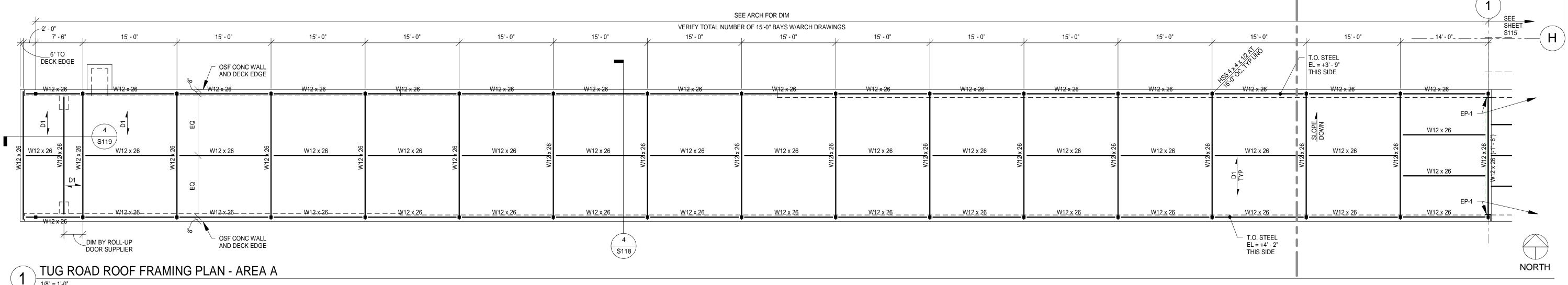
Date: June 3, 2010 Reg. No.: 20379 REVISIONS NO. DESCRIPTION DATE Conformance Set 07-12-10 **DATE ISSUED:** 07-12-10 **REVIEWED BY:** PAJ / CWB DRAWN BY: SJL **DESIGNED BY:** CWB AEP PROJECT NUMBER

> SHEET TITLE **TUG ROAD FOUNDATION PLAN**

213-1882-091

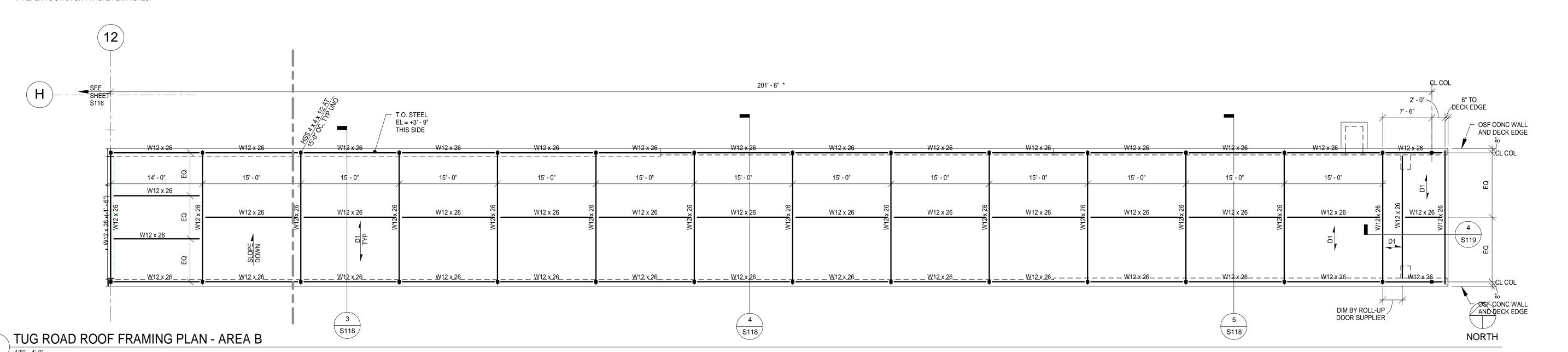
(C) 2009 REYNOLDS, SMITH AND HILLS INC

SHEET NUMBER **S118**



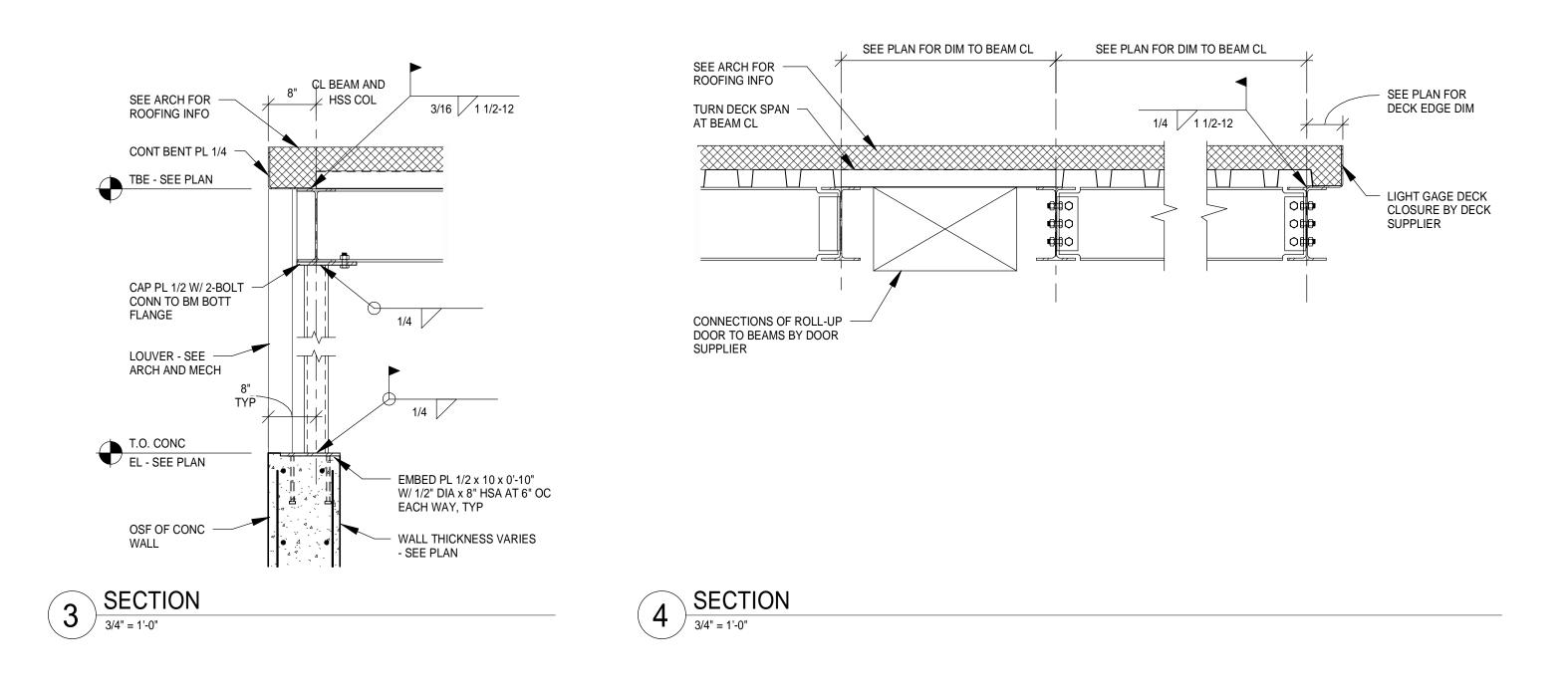
NOTES:

1. REFER TO S115 FOR TYPICAL PLAN NOTES.



NOTES:

1. REFER TO \$115 FOR TYPICAL PLAN NOTES.



FOR INFORMATION
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DRAWN BY:

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	Conformano	e Set	07-12-10
DATE	SISSUED:	07-12-10	
REVIEWED BY:		PAJ / CWB	

DESIGNED BY: CWB

AEP PROJECT NUMBER

SJL

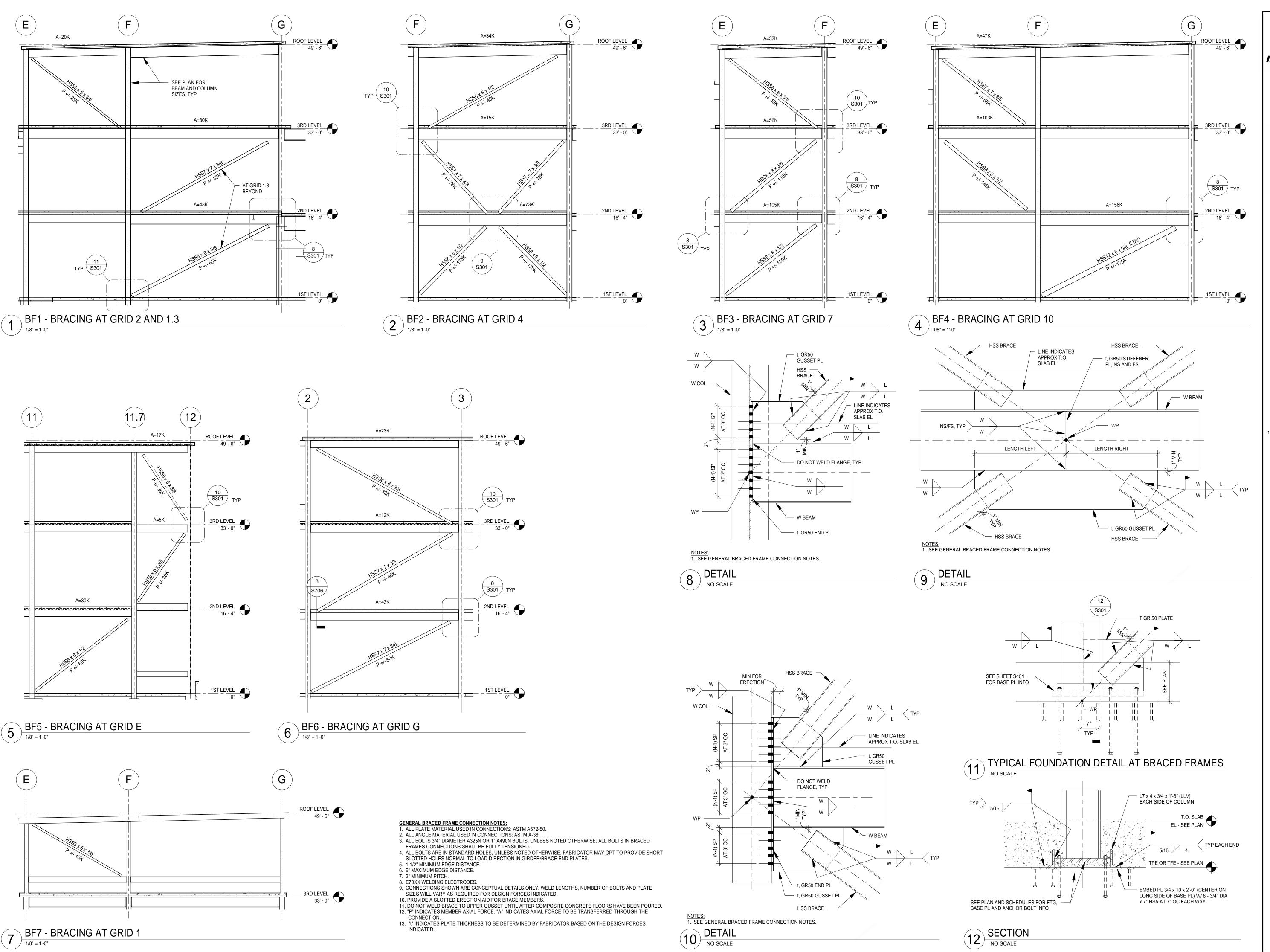
213-1882-091

SHEET TITLE

213-1882-091
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TUG ROAD ROOF FRAMING PLAN

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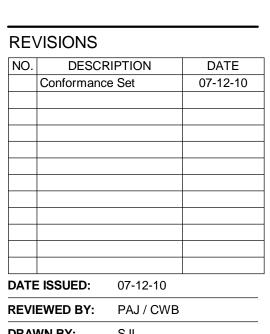
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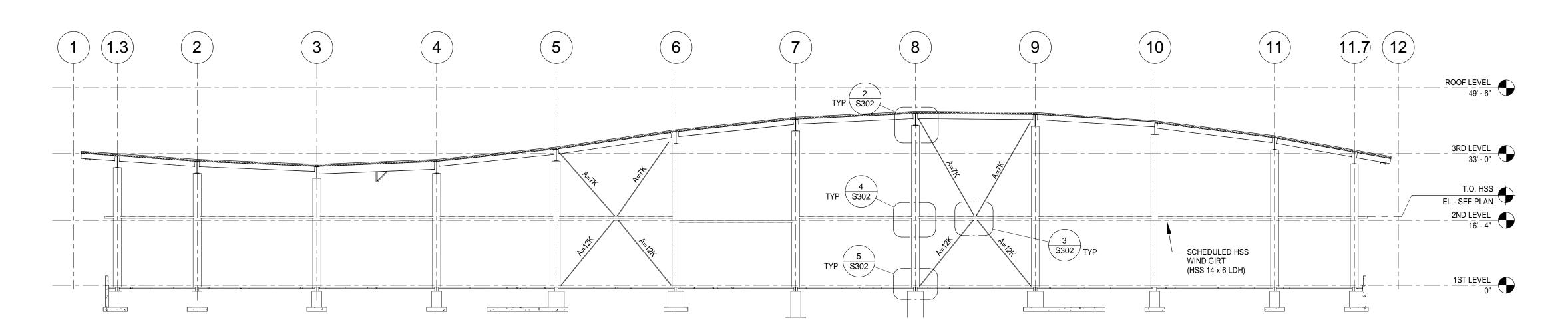
DRAWN BY: SJL **DESIGNED BY:** CWB

> AEP PROJECT NUMBER 213-1882-091

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SHEET TITLE **BRACING ELEVATIONS AND DETAILS**

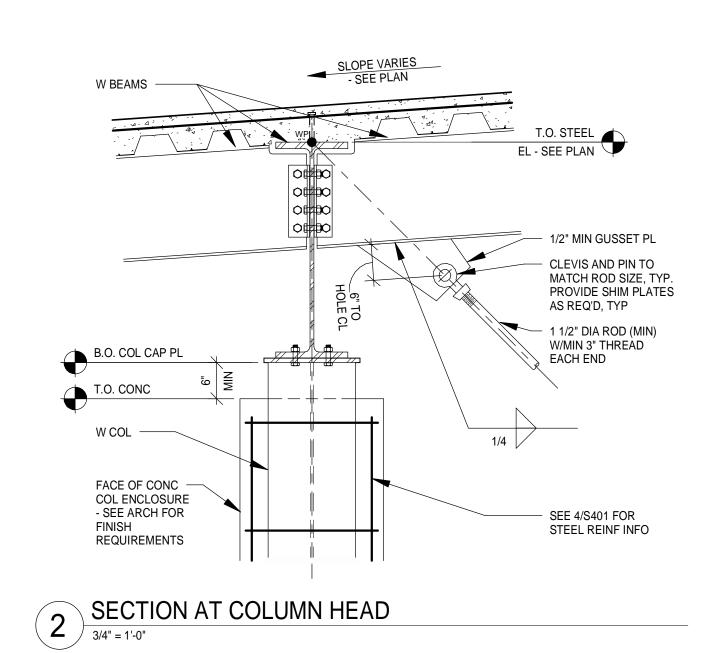
> SHEET NUMBER **S301**

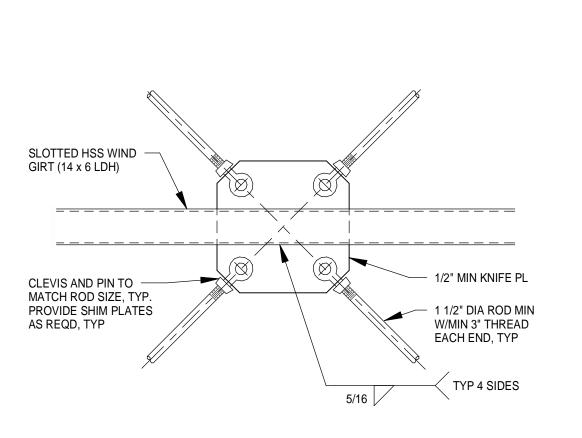


1 ELEVATION AT GRID "C" 1/16" = 1'-0"

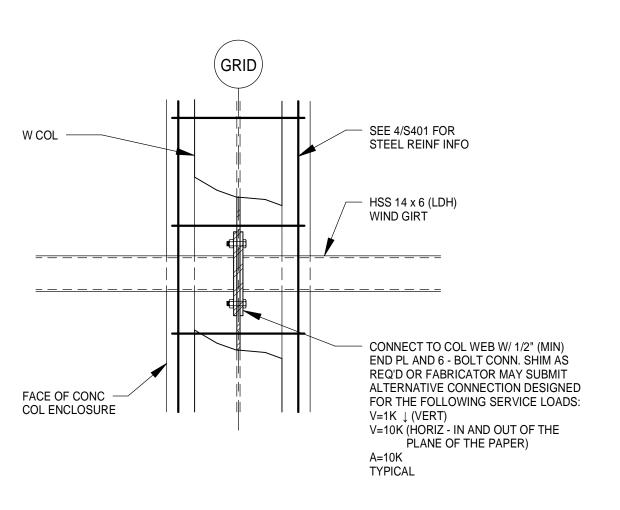
NOTES:

1. SEE GENERAL BRACED FRAME CONNECTION NOTES ON SHEET S301, TYPICAL THIS SHEET.



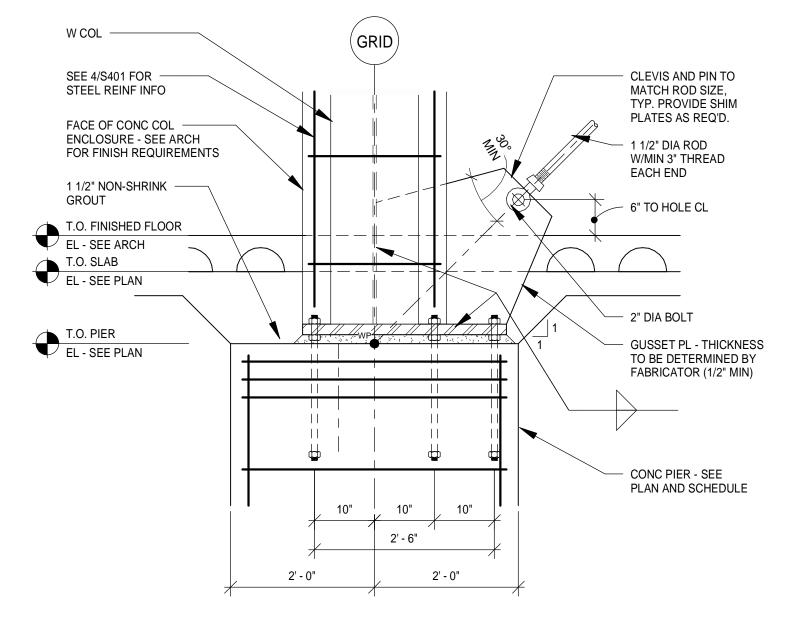






4 SECTION AT COLUMN TO GIRT CONNECTION

3/4" = 1'-0"



SECTION AT COLUMN BASE

3/4" = 1'-0"



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REVIEWED BY: PAJ / CWB
DRAWN BY: SJL

DESIGNED BY: CWB

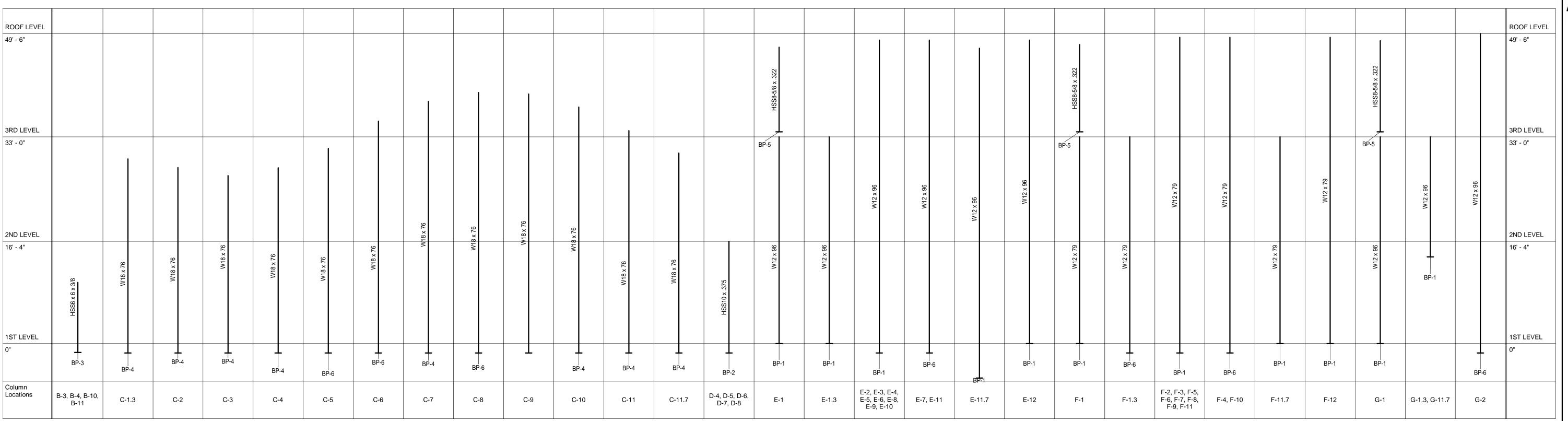
AEP PROJECT NUMBER

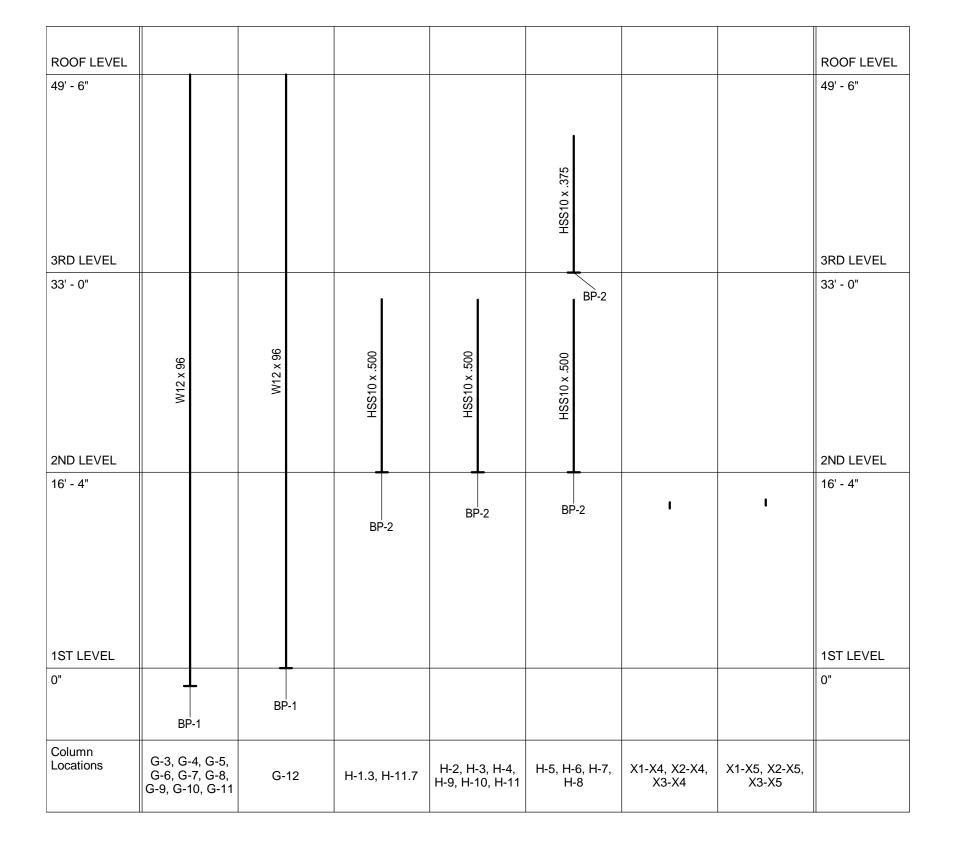
213-1882-091

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BRACING ELEVATIONS AND DETAILS

SHEET NUMBER

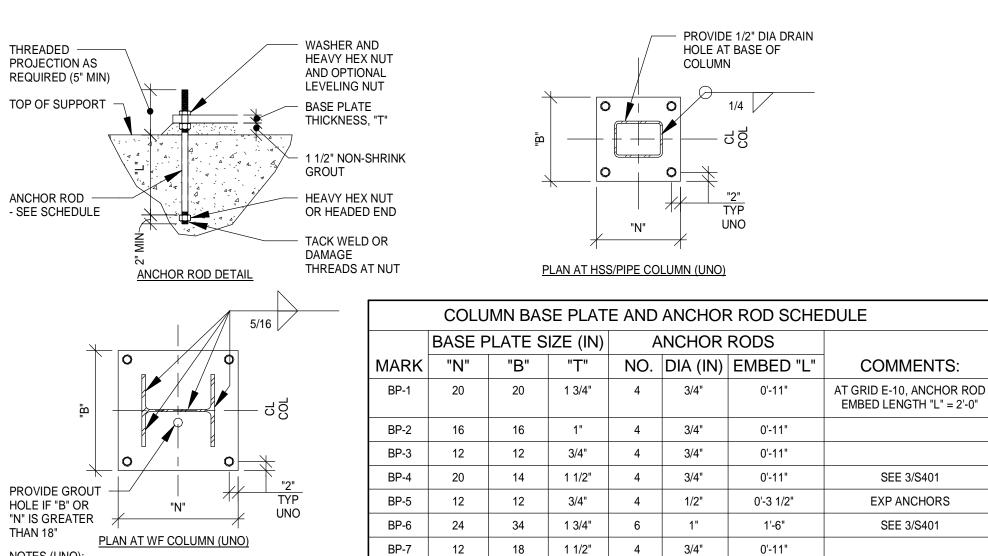




NOTES:

1. FOR BASE PLATE AND ANCHOR BOLT INFORMATION, SEE COLUMN BASE PLATE SCHEDULE THIS SHEET. 2. AT HSS ROUND COLUMNS, FABRICATOR MAY OPT TO SUBMIT EQUIVALENT PIPE SECTION TO A/E FOR REVIEW IN LIEU OF HSS ROUND COLUMN SHOWN.

STEEL COLUMN SCHEDULE



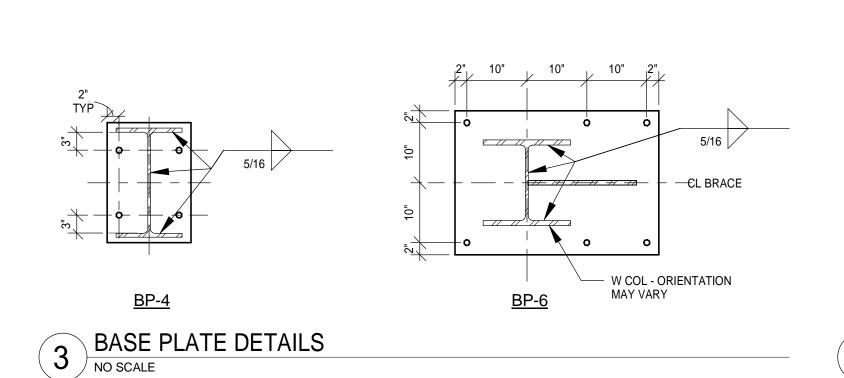
NOTES (UNO):

1. SEE SCHEDULE FOR BASE PLATE AND ANCHOR ROD DIMENSIONS. 2. DIMENSION "N" IS PARALLEL TO WF WEB OR LONGER HSS DIMENSION. 3. ANCHOR RODS SHALL BE ASTM F1554, GRADE 36.

4. BASE PLATES SHALL BE ASTM A36, MINIMUM. 5. MILL COLUMN BASE AND/OR BASE PLATE AS NECESSARY FOR FULL CONTACT. 6. ANCHOR RODS SHALL SET BY TEMPLATE AND NOT BE SET INTO CONCRETE AFTER CONCRETE IS CAST.

7. SEE SHEETS S301 AND S302 FOR ADDITIONAL INFORMATION AT BRACED FRAME BASE PLATES. 8. FOR ALL UNDESIGNATED BASE PLATES, MINIMUM "N" = MEMBER SIZE + 4". MINIMUM "B" = MEMBER WIDTH + 1". MINIMUM "T" = 1/2". MINIMUM 4 - 3/4" DIAMETER ANCHOR RODS.

COLUMN BASE PLATE AND ANCHOR ROD SCHEDULE NO SCALE



1" CLR TO #3 TIE AT 18" OC TIES, MIN SEE ARCH -- 4 - #7 VERT BARS (NO FOR FINISH HOOKS INTO PIER OR REQUIREMENTS FTG ARE REQ'D) PL 3/4 x 6 x 1'-3" (LDH) (VERIFY DIMS AND T.O. 5/16 PL EL W/CURTAIN WALL SUPPLIER PRIOR TO INSTALLATION)

NOTES:
1. SEE PLAN FOR LOCATIONS.
CONCRETE ENCASED WIDE FLANGE COLUMN NO SCALE

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SJL **DESIGNED BY:** CWB

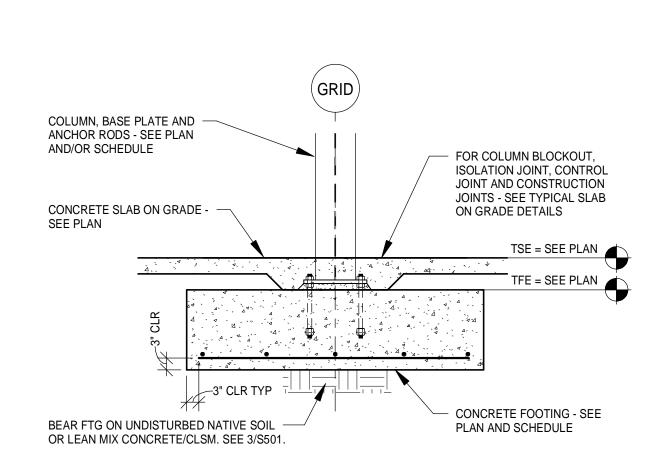
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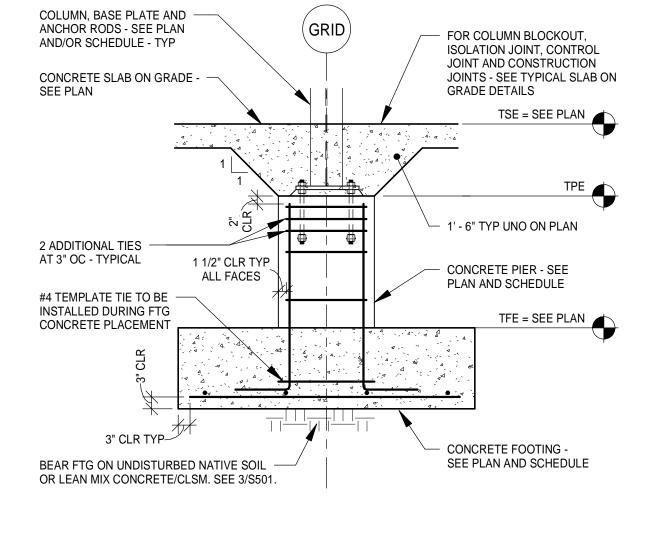
SHEET TITLE

COLUMN SCHEDULE AND **DETAILS**

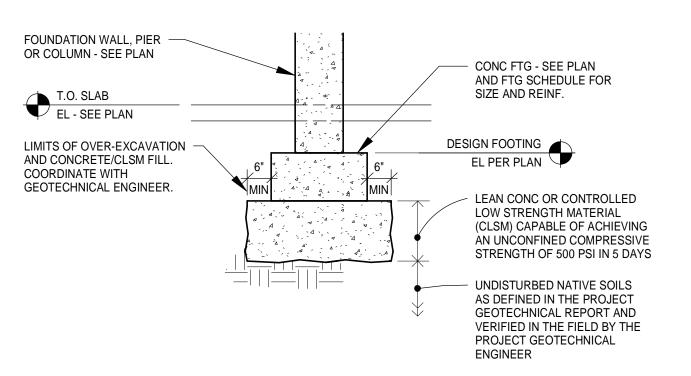
> SHEET NUMBER **S401**



TYPICAL INTERIOR WF COLUMN FOOTING DETAIL NO SCALE



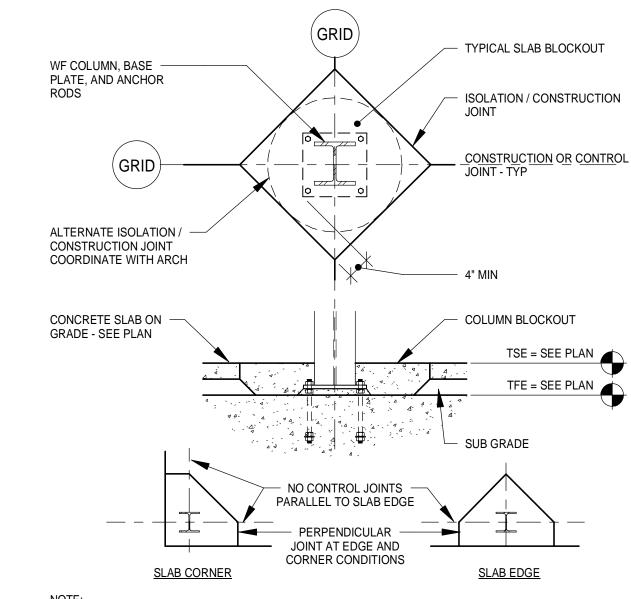
TYPICAL WF COLUMN, CONCRETE PIER AND FOOTING DETAIL



1. THIS DETAIL APPLIES ONLY AT LOCATIONS WHERE THE GEOTECHNICAL ENGINEER HAS DETERMINED THAT SOILS AT THE DESIGN FOOTING ELEVATIONS ARE NOT ADEQUATE FOR FOOTING SUPPORT ACCORDING TO THE ALLOWABLE SOIL BEARING CAPACITY LISTED UNDER "DESIGN UNIT STRESS" ON SHEET S002. 2. IN LIEU OF OVER-EXCAVATING AND PLACING LEAN CONCRETE OR CLSM AS OUTLINED IN THIS DETAIL.

CONTRACTOR MAY LOWER THE DESIGN FOOTING ELEVATION SUCH THAT THE FOOTING RESTS DIRECTLY ON UNDISTURBED NATIVE SOILS AS APPROVED BY THE GEOTECHNICAL ENGINEER IN THE FIELD. 3. SEE GEOTECHNICAL REPORT FOR WATER TABLE ELEVATIONS. CONTRACTOR TO MAKE ADEQUATE PROVISIONS FOR DEWATERING AS REQUIRED.

OVER-EXCAVATION WITH LEAN CONCRETE/CLSM FILL DETAIL NO SCALE



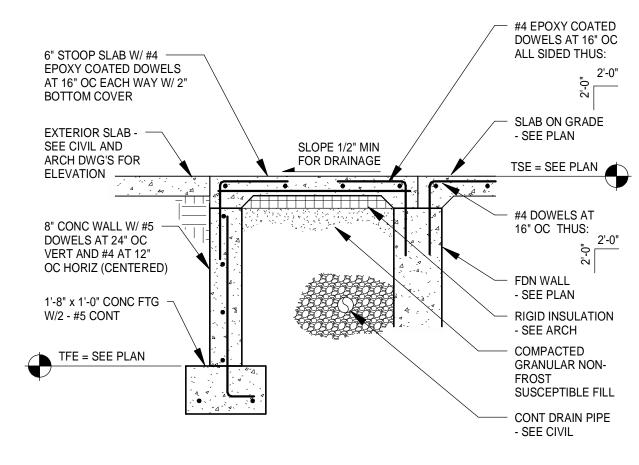
1. CONTRACTOR MAY PROPOSE ALTERNATE ISOLATION JOINT DETAIL TO A/E PRIOR TO CONSTRUCTION.

TYPICAL COLUMN ISOLATION JOINT NO SCALE

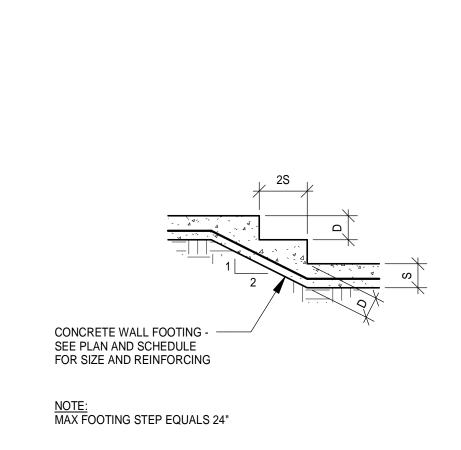
TENSION LAP SPLICE / CONCRETE / GR 60 UNCOATED REINFORCING					
STRUCTURAL ELEMENTS			AB-ON-GRADE ON METAL DE		
CONCRETE	F'o	c = 4,000 PSI (N	IORMAL WEIGH	HT)	
BAR SIZE	CLASS	"A" LAP	CLASS	"B" LAP	
	BASIC	TOP BAR	BASIC	TOP BAR	
#3	12"	14"	14"	18"	
#4	15"	19"	19"	25"	
#5	18"	23"	23"	30"	
#6	22"	28"	28"	36"	
#7	32"	42"	42"	55"	
#8	42"	55"	55"	71"	
#9	53"	69"	69"	90"	
#10	68"	88"	88"	114"	
#11	83"	108"	108"	140"	

1. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12" OF CONCRETE PLACED BELOW THEM. 2. USE CLASS "B" LAP LENGTHS - TYPICAL UNLESS NOTED OTHERWISE ON DRAWINGS.

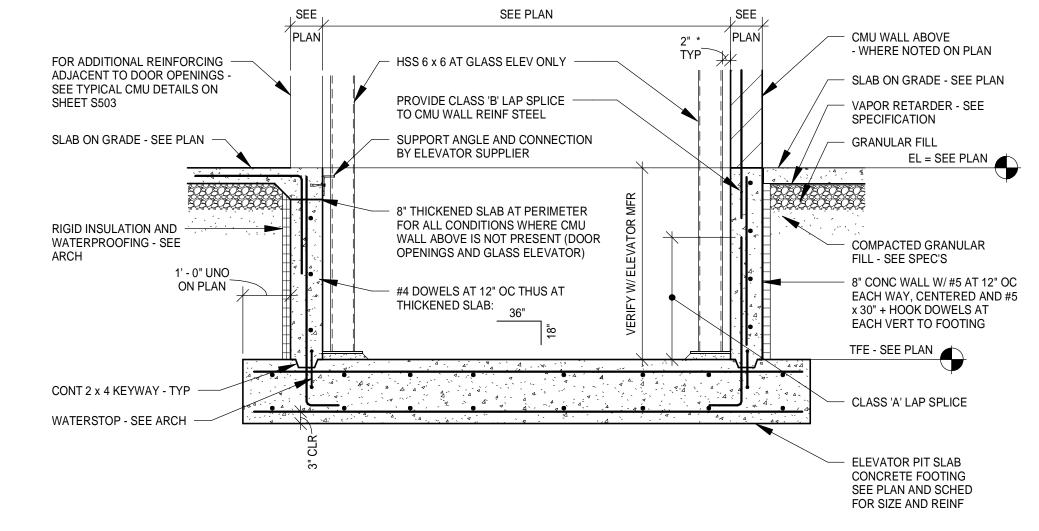




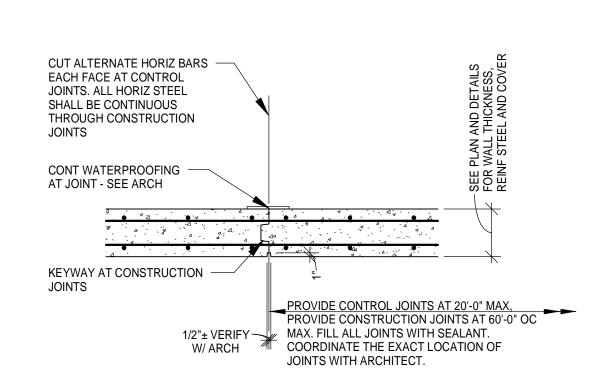
TYPICAL STOOP DETAIL NO SCALE



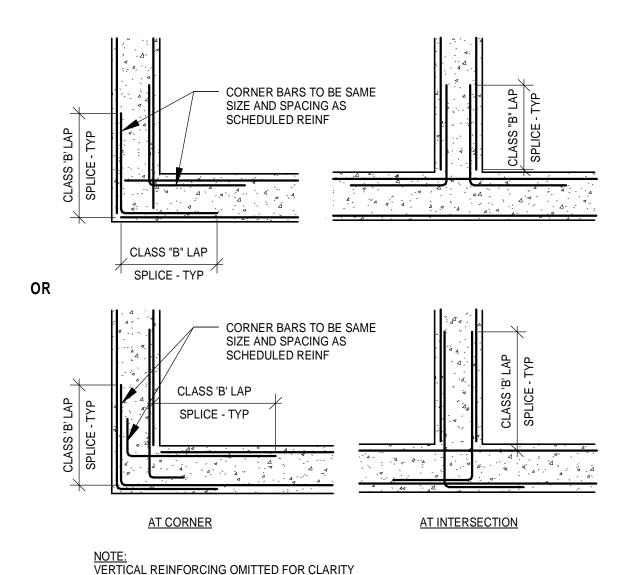
TYPICAL FOOTING STEP NO SCALE



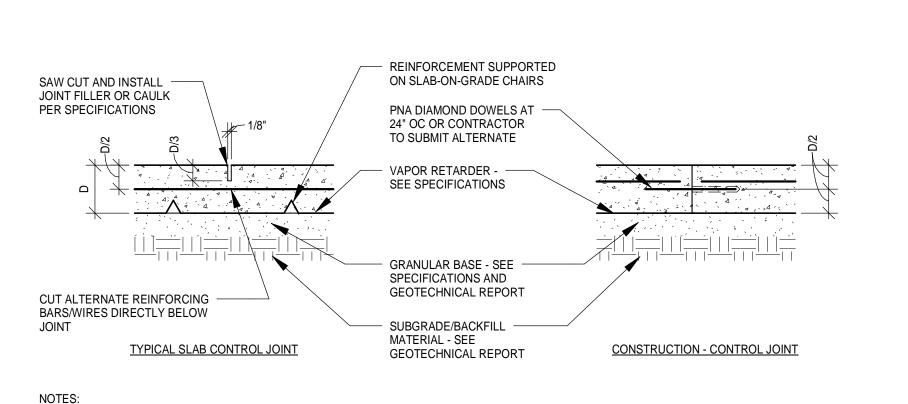
SECTION THRU ELEVATOR PIT NO SCALE



TYPICAL CONSTRUCTION/CONTROL JOINTS FOR CONCRETE WALLS



10 TYPICAL CONCRETE CORNER BAR PLACING DETAIL
NO SCALE

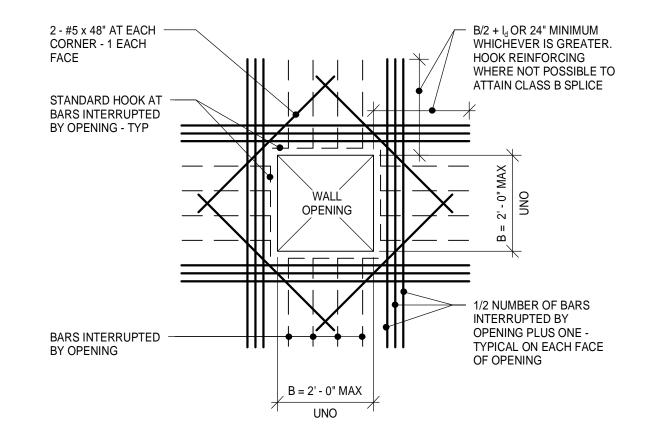


1. A CONSTRUCTION JOINT WHICH IS NOT INTENDED TO ALSO SERVE AS A CONTROL JOINT IS TO HAVE ALL REINFORCING EXTEND THROUGH IT AND TO HAVE NO GROOVE/SAW-CUT, UNLESS NOTED OTHERWISE. 2. IGNORE REINFORCING NOTES AT UNREINFORCED OR FIBER REINFORCED SLABS-ON-GRADE. 3. FOR EXTERIOR SLAB ON GRADE EXPOSED TO FREEZE-THAW CYCLES, CONSTRUCT A SLAB EXPANSION-CONTRACTION JOINT THE

TYPICAL SLAB ON GRADE CONSTRUCTION DETAIL

1/2" = 1'-0"

SAME EXCEPT ADD 3/8" COMPRESSIBLE MATERIAL THROUGH JOINT.



1. FOR WALL OPENINGS LARGER THAN 2'-0" (FOR WALLS NOT SUBJECT TO LATERAL EARTHPRESSURE) ADD 2 - #5 EACH FACE ALL 4 SIDES OF OPENING. EXTEND BAR 24" PAST OPENING UNLESS NOTED

TYPICAL ADDITIONAL BAR PLACING DETAIL FOR WALL OPENING

1/2" = 1'-0"

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	AEP P	ROJEC	T NUM	BER	
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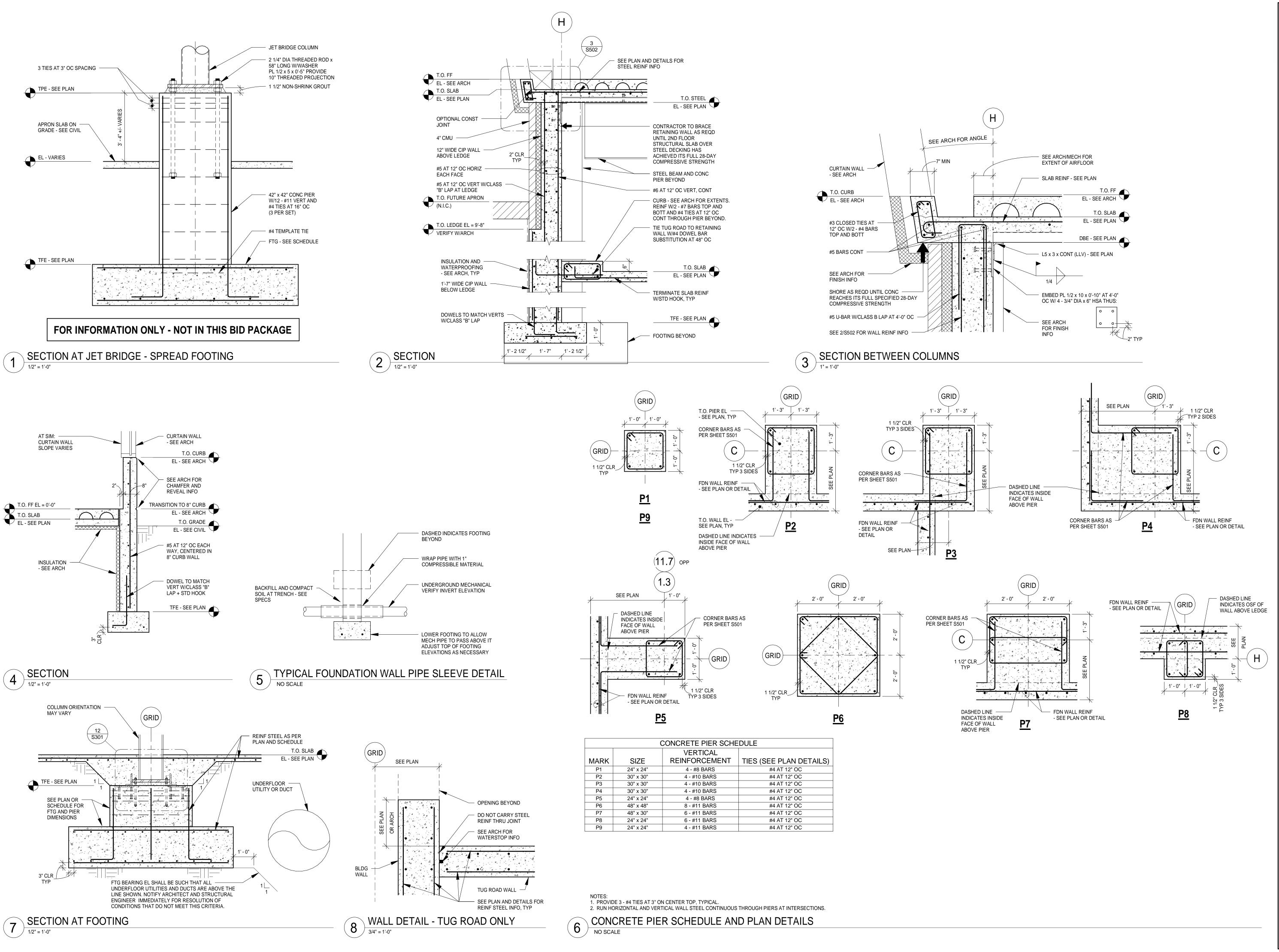
DETAILS

SHEET TITLE

STRUCTURAL

S501

SHEET NUMBER



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RE\	/ISIONS		
NO.	DESC	RIPTION	DATE
	Conformano	e Set	07-12-10
DATE	E ISSUED:	07-12-10	
REVI	EWED BY:	PAJ / CWB	

DRAWN BY: SJL

DESIGNED BY: CWB

AEP PROJECT NUMBER

213-1882-091

SHEET TITLE

(C) 2009 REYNOLDS, SMITH AND HILLS INC

STRUCTURAL DETAILS

> SHEET NUMBER **S502**

	CMU WALL REINFORCING SCHEDULE						
		CENTERED IN WALL					
MARK	WALL TYPE	FOOTING DOWELS	HORIZONTAL	VERTICAL	COMMENTS		
W1	8" CMU	#5 AT 24" OC	AS NOTED ON DETAILS	#5 AT 24" OC			

<u>UNLESS NOTED OTHERWISE:</u>
1. PROVIDE CLASS "A" SPLICE TO DOWELS TYPICAL.

2. FOR ALL CMU WALLS NOT INDICATED ON STRUCTURAL PLANS, SEE "NON-LOAD BEARING MASONRY PARTITION WALL REINFORCING SCHEDULE" 3. SEE LINTEL SCHEDULE THIS SHEET FOR LINTELS OVER MASONRY WALL OPENINGS.

1 WALL REINFORCING SCHEDU

	CMU LINTEL SCHEDULE						
WALL TYPE	ROUGH OPENING	REQUIRED LINTEL	BEARING LENGTH EACH END				
6" CMU	UP TO 3'-4"	8" DEEP BOND BM W/1 - #5 CONT BOTT	8"				
6" CMU	3'-4" TO 8'-0"	16" DEEP BOND BM W/1 - #5 CONT TOP AND BOTT	16"				
8" CMU	UP TO 5'-4"	8" DEEP BOND BM W/2 - #5 CONT BOTT	8"				
8" CMU	5'-4" TO 10'-0"	16" DEEP BOND BM W/2 - #5 CONT TOP AND BOTT AND #4 SINGLE LEG HOOKED STIRRUP AT 8" OC	16"				

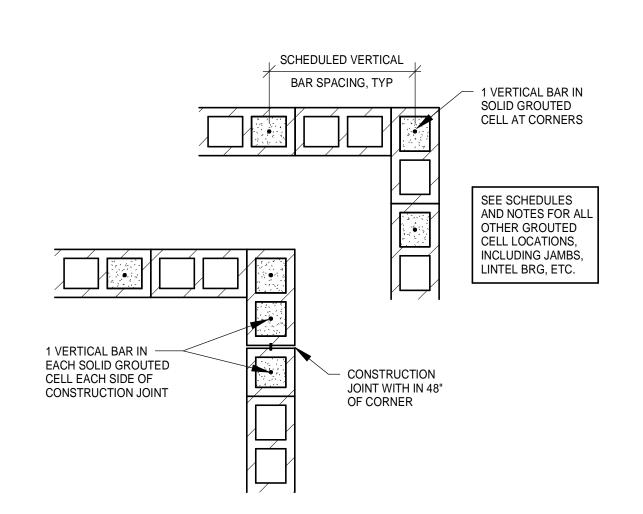
NOTES:

1. REFER TO ARCHITECTURAL DRAWINGS FOR ALL ROUGH OPENING SIZES AND ELEVATIONS.

2. USE LINTEL BLOCKS FOR ALL CMU LINTELS. 3. PROVIDE 8" DEEP BOND BM W/2 - #5 CONT BOTTOM AT ALL SILLS. 4. ALL LINTEL REINFORCING TO EXTEND 1'-4" MINIMUM BEYOND EDGES OF ROUGH OPENING.

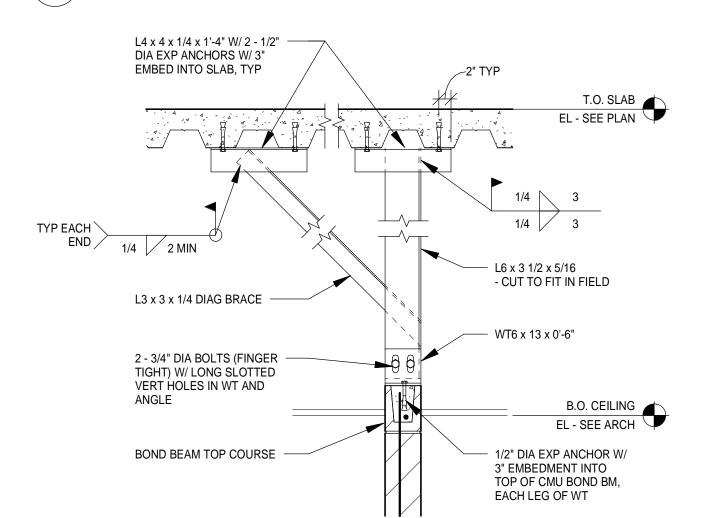
LINTEL SCHEDULE

 $^{/}$ NO SCALE



TYPICAL VERTICAL REINFORCING AT MASONRY CORNER DETAIL

NO SCALE

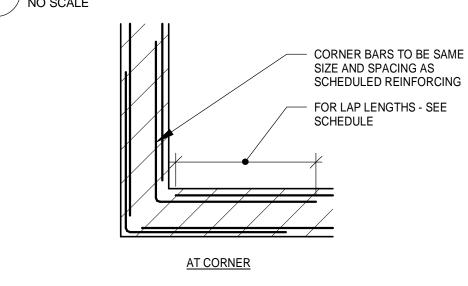


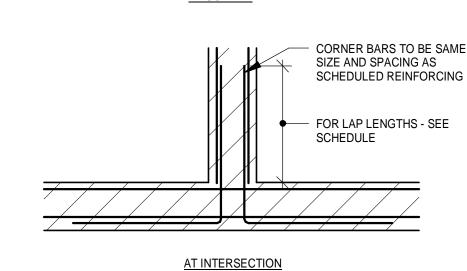
FLOOR DECK PARALLEL TO WALL NO SCALE

MASONRY LAP SPLICE SCHEDULE				
BAR SIZE	8" CMU (1 BAR IN CENTER)			
	f'c = 2,000 PSI			
#4	24"			
#5	30"			
#6	36"			

1. ALL BARS TO BE IN FULLY GROUTED CELLS OR BOND BEAMS 2. Fy = 60 KSI (Fs = 24 KSI MAX) 3. BAR LAP LENGTHS PER IBC 2006 SECTION 2107.5 AND ACI 530 EQ 2-9 4. SEE SHEET S501 FOR CONCRETE REINFORCING LAP SCHEDULE.



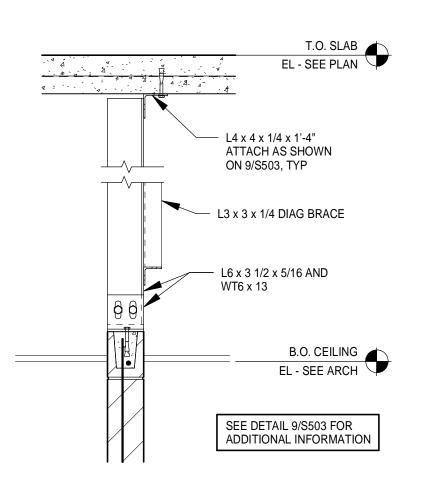




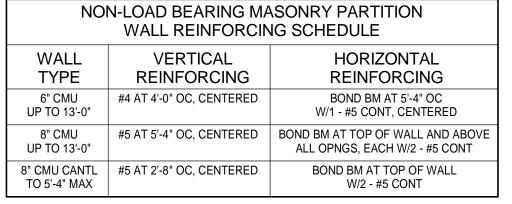
TYPICAL HORIZONTAL REINFORCING AT MASONRY CORNER

NOTE: VERTICAL REINFORCING OMITTED FOR CLARITY

NO SCALE



FLOOR DECK PERPENDICULAR TO WALL



NOTES:

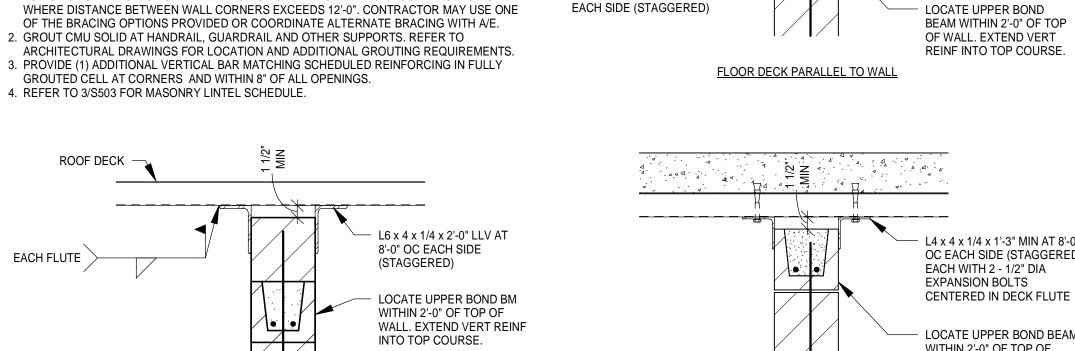
1. REFER TO TYPICAL DETAILS FOR DOWELS AT BOTTOM OF CMU WALLS AND BRACING AT TOP OF CMU WALLS. TOP OF WALL BRACING TO BE PLACED AT 10'-0" OC MAX SPACING WHERE DISTANCE BETWEEN WALL CORNERS EXCEEDS 12'-0". CONTRACTOR MAY USE ONE OF THE BRACING OPTIONS PROVIDED OR COORDINATE ALTERNATE BRACING WITH A/E.

ARCHITECTURAL DRAWINGS FOR LOCATION AND ADDITIONAL GROUTING REQUIREMENTS. 3. PROVIDE (1) ADDITIONAL VERTICAL BAR MATCHING SCHEDULED REINFORCING IN FULLY

GROUTED CELL AT CORNERS AND WITHIN 8" OF ALL OPENINGS.

ROOF DECK PERPENDICULAR TO WALL

4. REFER TO 3/S503 FOR MASONRY LINTEL SCHEDULE.



TYPICAL WALL REINFORCING

- SEE WALL REINFORCING

SCHEDULE AND GENERAL

STRUCTURAL NOTES

TYP EA END \

EA PL /

3/16

L3 x 3 x 1/4 x 1'-3" AT 8'-0" —

L4 x 4 x 1/4 x 1'-3" MIN AT 8'-0" OC EACH SIDE (STAGGERED), LOCATE UPPER BOND BEAM WITHIN 2'-0" OF TOP OF WALL. EXTEND VERT REINF INTO TOP COURSE. FLOOR DECK PERPENDICULAR TO WALL

FLUTE

- MASONRY LINTEL

SHOWN

SCHEDULED LINTEL REINFORCING

FILL SOLID AND REINF TWO (2) ADJACENT

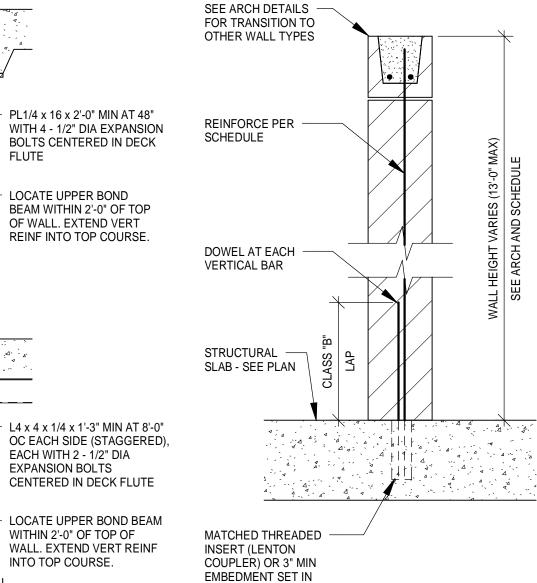
CORES (8" BRG) AND THREE (3) ADJACENT

TO STRUCTURAL LEVEL ABOVE LINTEL.

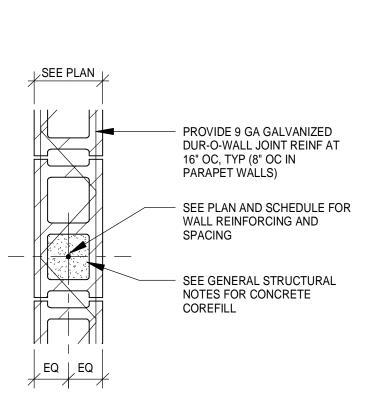
CORES (16" BRG) WITH VERT BAR TO MATCH

SCHEDULED WALL REINF. EXTEND ALL REINF

(16" DEEP LINTEL SHOWN)

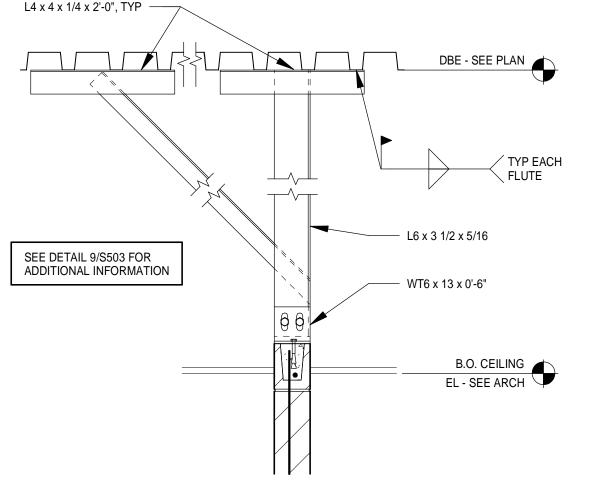




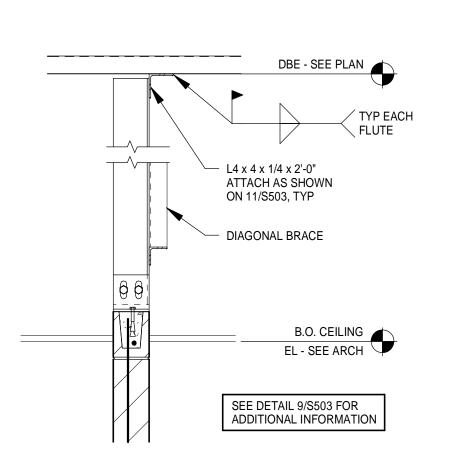


TYPICAL CMU WALL DETAIL NO SCALE





ROOF DECK PARALLEL TO WALL $(11)\frac{ROOF}{3/4" = 1'-0"}$



ROOF DECK PERPENDICULAR TO WALL

3/4" = 1'-0"

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DULUTH INTERNATIONAL **AIRPORT** DULUTH, MN

NEW TERMINAL DESIGN

CONSULTANTS

Interior Architects: SJA ARCHITECTS 11 E Superior Street Suite 340 Duluth MN 55802 TEL: (218) 724-8578 / FAX: (218) 724-8717

Structural Engineers: MBJ CONSULTING ENG.

501 Lake Avenue South, Suite 300, Duluth MN 55802 TEL: (218) 722-1056 / FAX: (218) 722-9306

> M/E/P/FP Engineers: COSENTINI

1 East Wacker Drive, Suite 103, Chicago IL 60601 TEL: (312) 670-1800 / FAX: (312) 670-1801

Baggage Handling Systems Consultants: BNP ASSOCIATES INC. 101 East Ridge Office Park, Suite 103, Danbury CT 06810 TEL: (203) 792-3000 / FAX: (203) 792-4900

> Landscape Consultants: **APPOLD DESIGN** 2432 East First Street, Duluth MN 55812 TEL: (218) 591-5079

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the

laws of the State of Minnesota. Print Name: Paul A. Johnson

Date: June 3, 2010 Reg. No.: 20379

DEVICIONS

KE'	V13101V3		
NO.	DESCRIPTION		DATE
	Conformano	e Set	07-12-10
DATE ISSUED:		07-12-10	
DEVIEWED BV:		DA I / CW/B	

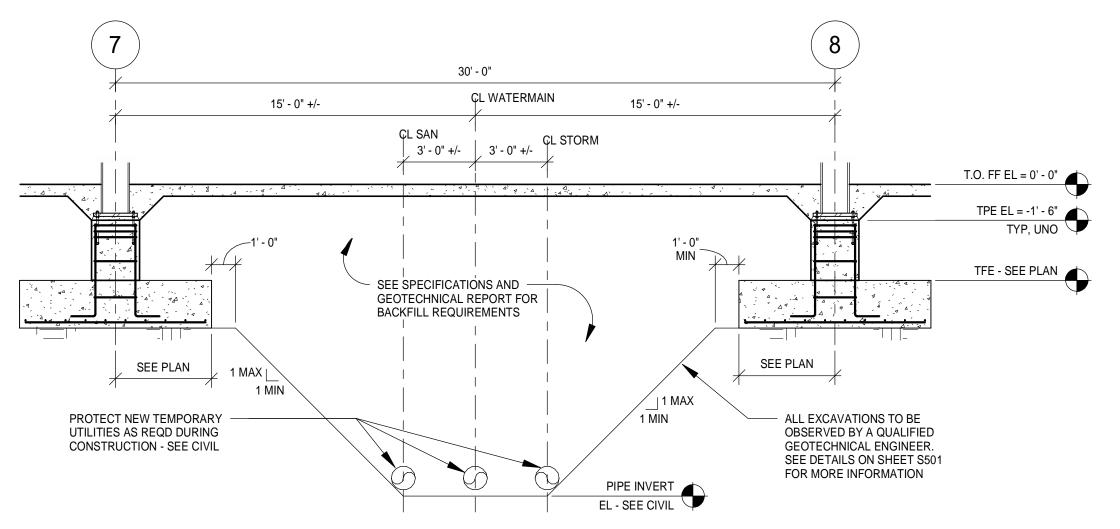
REVIEWED BY: PAJ / CWB DRAWN BY: SJL **DESIGNED BY:** CWB

AEP PROJECT NUMBER

213-1882-091 (C) 2009 REYNOLDS, SMITH AND HILLS INC

SHEET TITLE **STRUCTURAL DETAILS**

SHEET NUMBER **S503**

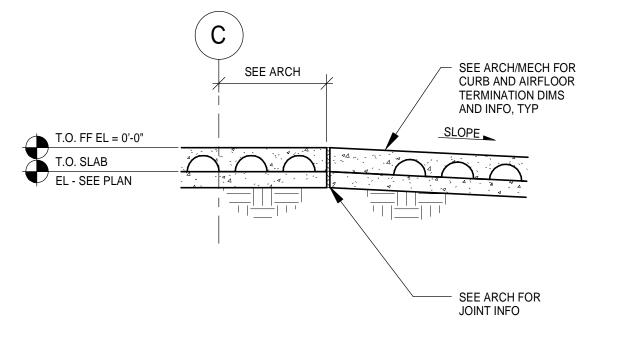


NOTES:

1. SEE GEOTECHNICAL REPORT FOR WATER TABLE ELEVATIONS. CONTRACTOR TO MAKE ADEQUATE PROVISIONS FOR DEWATERING AS REQUIRED. 2. PIPE INVERT LOCATION SHOWN SCHEMATICALLY REPRESENT LOCATIONS AT GRID E. 3. CONTRACTOR TO NOTIFY A/E IMMEDIATELY IF ACTUAL FIELD CONDITIONS VARY FROM LOCATIONS/SLOPES INDICATED.

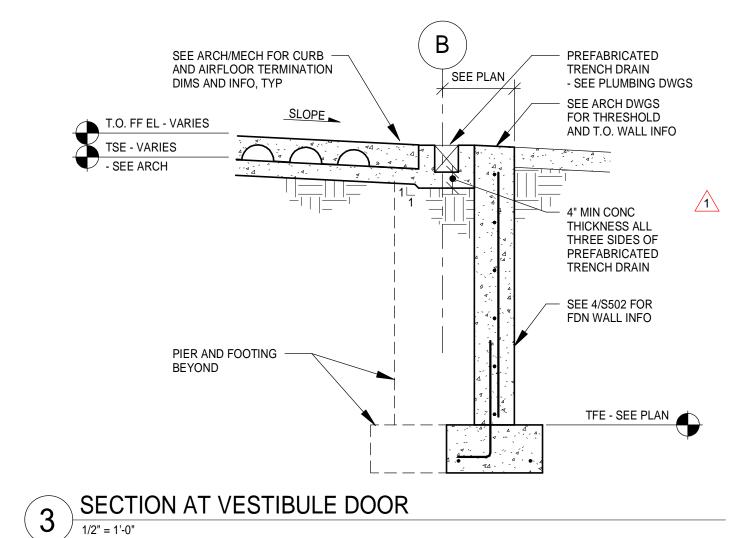
SECTION

1/4" = 1'-0"



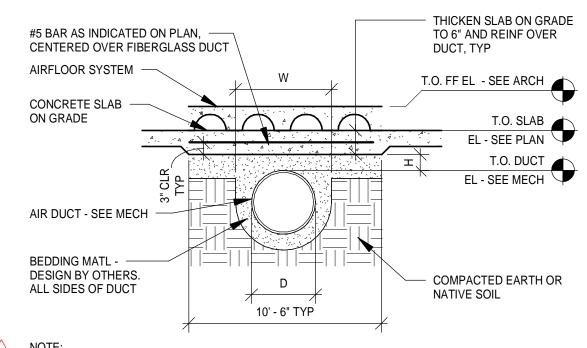
SECTION

1/2" = 1'-0"



METAL PANEL - SEE ARCH CHAMFER - SEE SPECIFICATIONS STEEL STUD T.O. CURB EL - SEE ARCH SEE ARCH FOR T.O. WALL STEP INFO SEE ARCH FOR REVEAL INFO T.O. FF EL = 0'-0" T.O. GRADE EL - SEE CIVIL 9 1/2" WIDE CIP FDN WALL W/ #6 AT 12" OC VERT AND #5 AT 12" OC HORIZ, INSULATION - SEE ARCH CENTERED IN WALL #6 DOWEL W/CLASS "B" PIER AND —— FTG BEYOND LAP + STD HOOK AT EACH TFE - SEE PLAN

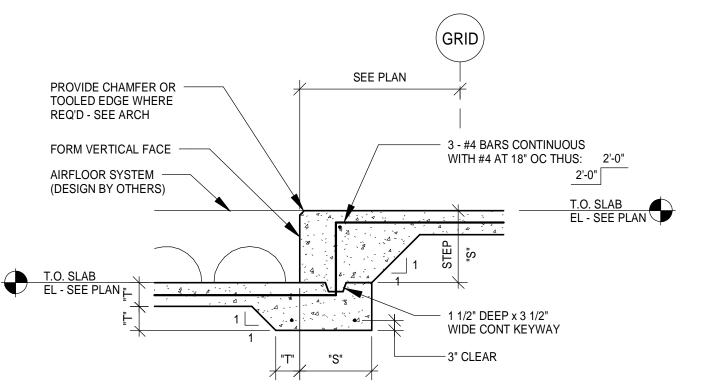
SECTION 1/2" - 41



NOTE:

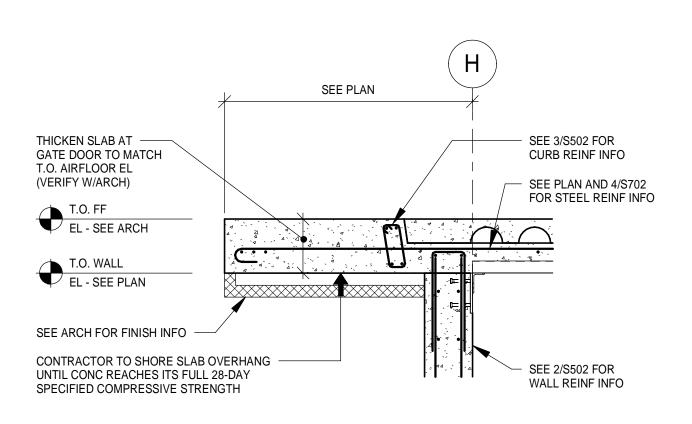
1. "H" AND "W" DIMENSIONS AND SPECIFICATIONS FOR BEDDING MATERIAL TO BE VERIFIED WITH UNDERGROUND DUCT SUPPLIER PRIOR TO CONSTRUCTION.

5 UNDERGROUND DUCTWORK DETAIL



SLAB STEP DETAIL

3/4" = 1'-0"



7 SECTION AT GATE DOOR SLAB



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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: Paul A. Johnson

Date: June 3, 2010 Reg. No.: 20379

REVISIONS NO. DESCRIPTION DATE 1 Addendum 1 06-10-10 Conformance Set 07-12-10 **DATE ISSUED:** 07-12-10 **REVIEWED BY:** PAJ / CWB

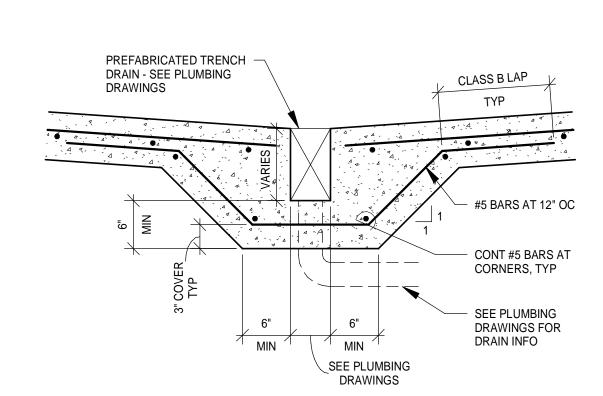
SJL DRAWN BY: **DESIGNED BY:** CWB AEP PROJECT NUMBER

213-1882-091 (C) 2009 REYNOLDS, SMITH AND HILLS INC

SHEET TITLE **STRUCTURAL DETAILS**

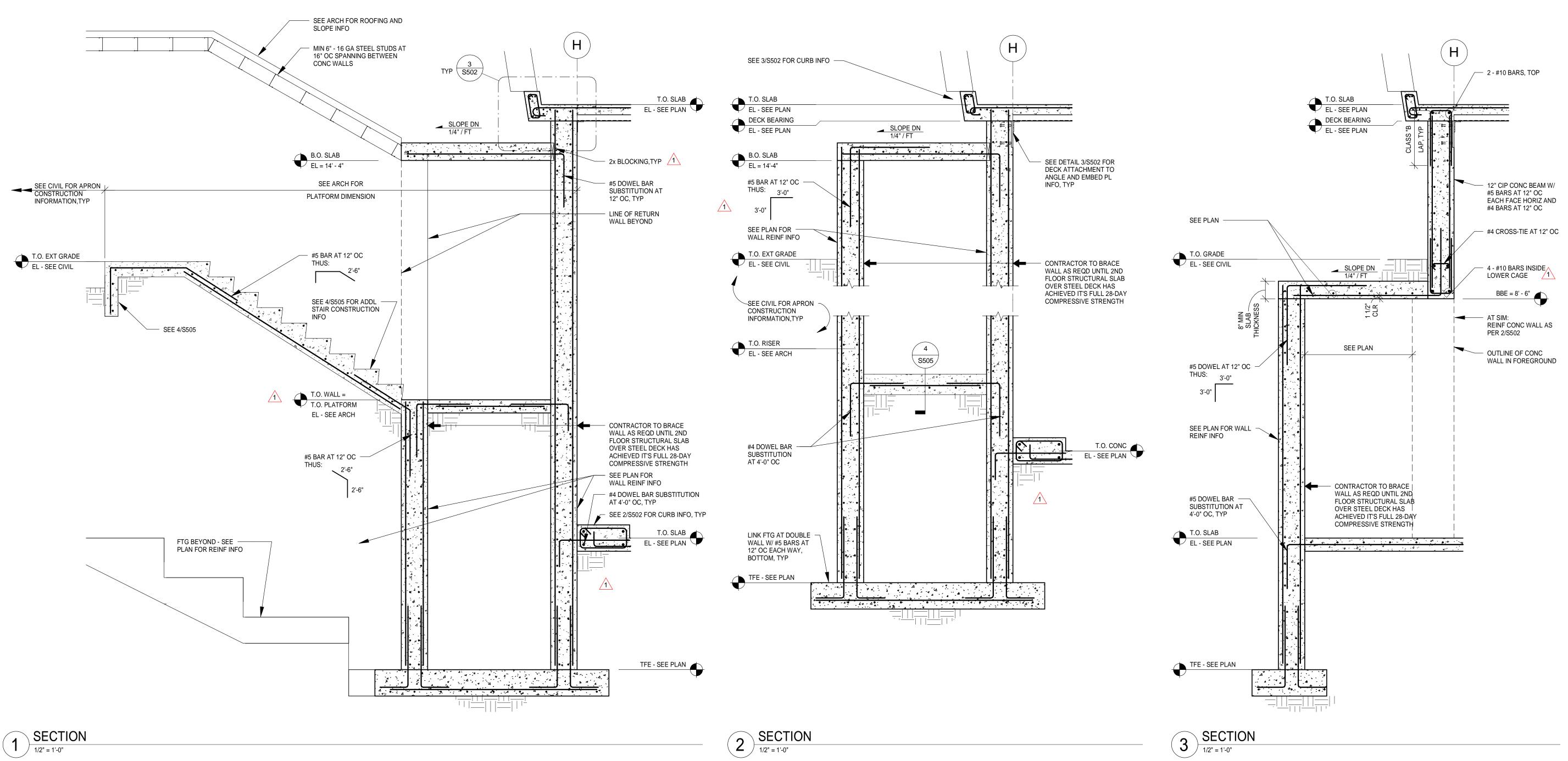
> SHEET NUMBER **S504**

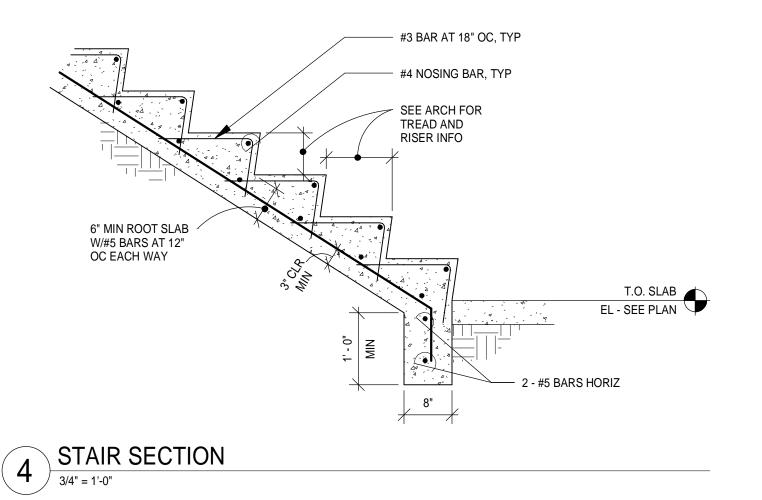
BID PACKAGE 1 CONFORMANCE





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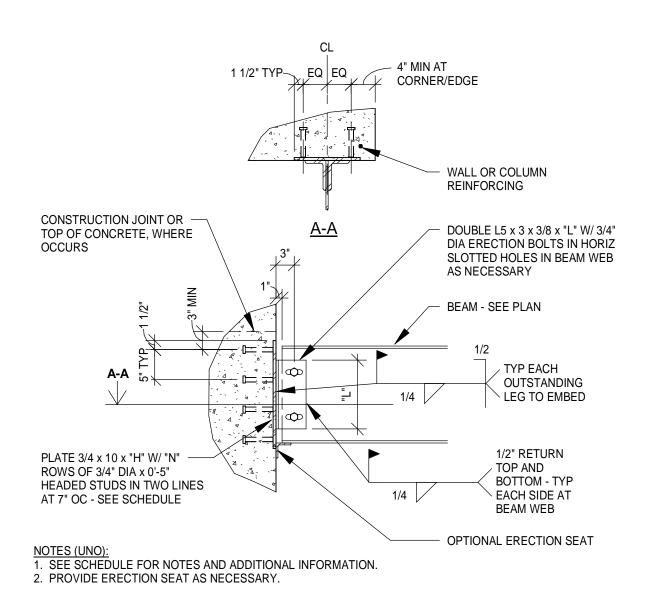
AEP PROJECT NUMBER

213-1882-091

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STRUCTURAL DETAILS

SHEET NUMBER



TYPICAL EMBED PLATE - DOUBLE ANGLE CONNECTION

DECK SUPPORT CONDITION

END SUPPORT

EDGE SUPPORT

INTERMEDIATE SUPPORT

END JOINT AT INT SUPPORT

SIDE LAP JOINT

ACCEPTABLE AT BUTT JOINTS.

NO SCALE

NOTES (UNO):

1. ALL PUDDLE (ARC-SPOT) WELDS SHALL BE 5/8" DIAMETER.

2. PROVIDE DECK ATTACHMENTS AT SPACING SHOWN UNLESS NOTED OTHERWISE ON DRAWINGS

4. HEADED STUD INSTALLED THROUGH THE DECK MAY BE SUBSTITUTED FOR PUDDLE WELD

3. DECK SHEETS SHALL BE BUTTED AT END JOINTS. PROVIDE 2 1/2" MINIMUM BEARING. GAPS UP TO 1" ARE

TYPICAL EMBED PLATE SCHEDULE								
MARK	ARK STEEL STUD ROWS PLATE LENGTH MIN ANGLE LENGTH							
	BEAM SIZE	"N"	"H"	"L"				
EP-1	W12, W14	3	13"	8 1/2"				
EP-2	W16	4	18"	11 1/2"				
EP-3	W33	8	38"	24"				
EP-4	HSS 5 x 5	3	13"	NA				

NOTES (UNO):

1. PROVIDE EMBED PLATES CORRESPONDING TO BEAM SIZES IN SCHEDULE, UNLESS NOTED

- OTHERWISE ON PLANS OR DETAILS. 2. PROVIDE HOLES AS NECESSARY FOR PLATE ATTACHMENT TO FORMWORK (5/16" DIA MAX). 3. COORDINATE CONCRETE REINFORCING BAR PLACEMENT WITH HEADED STUDS.
- 4. FIELD VERIFY EMBED PLATE PLACEMENT PRIOR TO BEAM ERECTION. 5. AT EP-4, PROVIDE 3" DIAMETER HOLE CENTERED ON HSS FOR CONDUIT ACCESS.

TYPICAL EMBED PLATE SCHEDULE

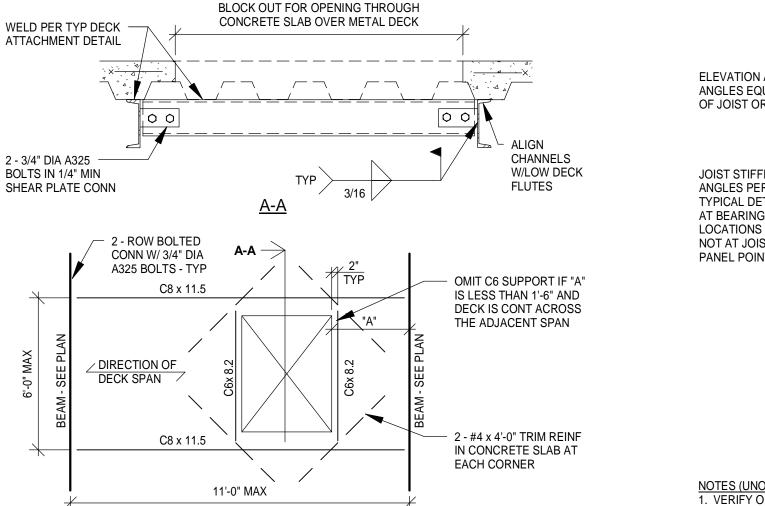
			*	* 2	
		, MI		* 24" WIDE DI	C 4
	2. SPANIMI	ume /		//\\	1 >+
	2" MM LAP			Wrn	AT PERINETER OR EXPLORI JOINT
* *			/ <u>'</u>	~ORTUATA	
EDGE SUPPORT AT PERMETER AT PERP JT OR EXP JT			SUPPORT DIATE	EQ TYP	** I
OREN	SUELAP	INTERNOTORY SUPPORTORY SUPPORTORY		*	
	Signi	77° 77°			

DECK SUPPORT CONDITION	DECK ATTACHMENT
END SUPPORT	PUDDLE WELDS AT EACH LOW FLUTE
EDGE SUPPORT	PUDDLE WELDS AT 12" OC
INTERMEDIATE SUPPORT	PUDDLE WELDS AT EACH LOW FLUTE
END LAP JOINT	PUDDLE WELDS AT EACH LOW FLUTE
SIDE LAP JOINT	#10 TEK SCREWS PER SPAN

NOTES (UNO):

1. ALL PUDDLE (ARC-SPOT) WELDS SHALL BE 5/8" DIAMETER. 2. PROVIDE DECK ATTACHMENTS AT SPACING SHOWN UNLESS NOTED OTHERWISE ON DRAWINGS. 3. AT END LAP CONDITIONS, PUDDLE WELDS SHALL PROVIDE FUSION THROUGH ALL DECK LAYERS.

TYPICAL 3" STEEL ROOF DECK ATTACHMENT DETAIL TYPICAL 3" COMPOSITE STEEL DECK ATTACHMENT DETAIL



DECK ATTACHMENT

PUDDLE WELDS AT EACH LOW FLUTE

PUDDLE WELDS AT 12" OC

PUDDLE WELDS AT EACH LOW FLUTE

PUDDLE WELDS AT EACH LOW FLUTE, EACH SIDE

#10 TEK SCREWS OR 1 1/2" SEAM WELD AT 36" OC MAX

1. DO NOT CUT DECK AT OPENINGS UNTIL CONCRETE HAS ATTAINED ITS SPECIFIED COMPRESSIVE 2. VERIFY OPENING DIMENSIONS WITH ARCHITECTURAL DRAWINGS AND MECHANICAL TRADES

TYPICAL FLOOR OPENING FRAME (OVER 32")

OF JOIST OR BEAM ROOF OPENING VERIFY VERIFY
JOIST STIFFENER ANGLES PER TYPICAL DETAIL AT BEARING LOCATIONS IF NOT AT JOIST PANEL POINTS AT STEEL JOIST SECTION STEEL ROOF DECK L5 x 5 x 5/16 x 0'-6" - TYP AT STEEL BEAM
DIRECTION OF JATE OMIT ANGLE WHEN "A" IS LESS THAN 12" AND DECK IS CONTINUOUS ACROSS ADJACENT SPAN L5 x 5 x 5/16 PLAN

 VERIFY OPENING SIZES AND LOCATIONS WITH MECHANICAL CONTRACTOR PRIOR TO FABRICATION. 2. WELD DECK AT OPENING AT EACH FLUTE WITH PUDDLE WELDS, PER THE TYP DECK ATTACHMENT DETAIL 3. DO NOT CUT OPENING IN DECK UNTIL NECESSARY, CONTRACTOR TO COORDINATE 4. THIS ROOF OPENING FRAME IS NOT DESIGNED TO SUPPORT THE WEIGHT OF ROOF TOP MECHANICAL EQUIPMENT WEIGHING OVER 400 LBS. EQUIPMENT SHALL BE SUPPORTED ON A STRUCTURAL CURB DESIGNED BY THE SUPPLIER TO SPAN TO THE PRIMARY STRUCTURAL FRAMING.

TYPICAL ROOF OPENING FRAME FOR 3" DECK

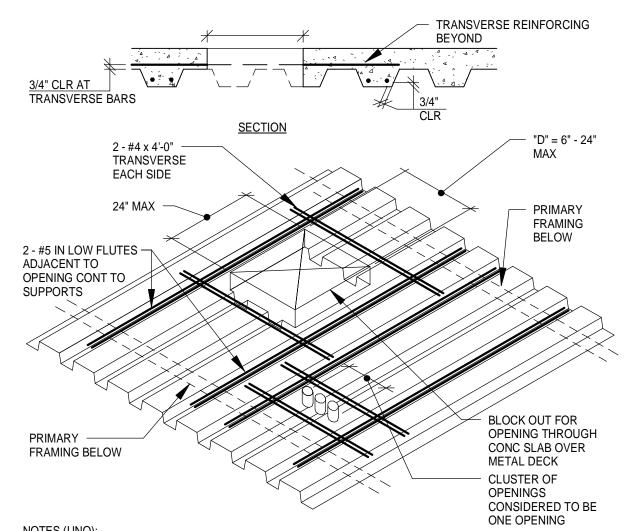
BEAM SHEAR CONNECTION SCHEDULE							
STEEL BEAM		SHEAR CONNECTION SUPPORTING DECK ONLY	DOUBLE SHEAR CONNECTION FOR BEAMS SUPPORTING OTHER BEAM				
SIZE	MIN ROWS OF BOLTS	MIN DESIGN SERVICE CAPACITY (KIPS)	MIN ROWS OF BOLTS	MIN DESIGN SERVICE CAPACITY (KIPS)			
W8, W10	2	12	2	24			
W12	3	23	3	46			
W14	3	23	3	46			
W16	4	35	4	70			
W18	5	45	4	70			
W21	6	55	5	90			
W24	7	65	6	110			
W27	7	65	6	110			
W30	8	75	7	130			
W33	8	75	7	130			
W36	9	85	8	150			

I. CONTRACTOR/FABRICATOR SHALL DESIGN TYPICAL SHEAR CONNECTIONS FOR THIS PROJECT. CONNECTION TYPES SHALL CONFORM TO AISC STANDARD SHEAR CONNECTIONS, SUBMIT PROPOSED CONNECTION TYPES FOR APPROVAL BEFORE STARTING SHOP

- DRAWINGS. 2. PROVIDE BEAM CONNECTIONS FOR END REACTIONS INDICATED ABOVE OR AS SHOWN ON PLAN OR DETAIL, WHICHEVER IS GREATER. BEAM TO BEAM CONNECTIONS MAY BE SINGLE OR DOUBLE SHEAR, AS REQUIRED TO PROVIDE THE SPECIFIED CONNECTION CAPACITY WITHIN THE AVAILABLE CONNECTION GEOMETRY. ALL BEAM TO COLUMN CONNECTIONS SHALL BE DOUBLE SHEAR.
- 3. ALL BOLTS SHALL BE 3/4" DIAMETER A325-N OR 1" DIAMETER A490-N, UNLESS NOTED OTHERWISE. 4. SHOP CONNECTIONS MAY BE WELDED (WITH CAPACITY AS NOTED HEREIN) OR BOLTED.
- 5. VALUES SHOWN ASSUME 1/4" BEAM WEB THICKNESS, MINIMUM.

6. USE TWO ANGLE CONNECTION TO ALL BEAMS FRAMING INTO CONCRETE EMBED PLATES.

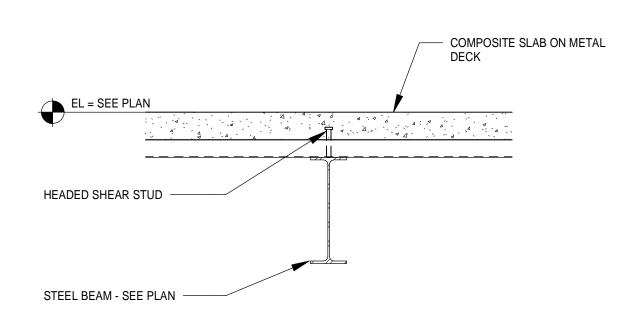
BEAM SHEAR CONNECTION SCHEDULE



NOTES (UNO):

1. DO NOT CUT DECK AT OPENINGS UNTIL CONCRETE HAS ATTAINED ITS SPECIFIED COMPRESSIVE STRENGTH. 2. PROVIDE 2 TIMES "D" CLEAR DISTANCE BETWEEN OPENING EDGES. "D" IS LARGEST OF ADJACENT OPENING DIMENSIONS.

TYPICAL FRAMING AT FLOOR OPENINGS (6"-32" MAX) NO SCALE



NOTES (UNO):

1. SEE TYPICAL DETAILS FOR DECK ATTACHMENT AND HEADED STUD INFORMATION.

TYPICAL SECTION AT COMPOSITE DECK PERPENDICULAR TO BEAM NO SCALE

ELOOD AND DOOF DECK COLIEDIU E										
	FLOOR AND ROOF DECK SCHEDULE									
		CONCRET	E TOPPING							
MARK	DECK TYPE	THICKNESS	REINFORCING	COMMENTS						
S1	3" - 19 GA COMPOSITE DECK	4 1/2" NORMAL WT	STRUX 90/40 SYNTHETIC FIBER	5.0 LBS/CU YD						
S2	3" - 19 GA COMPOSITE DECK	6 1/2" NORMAL WT	#5 AT 12" OC EACH WAY	1 1/2" TOP COVER						
S3	3" - 19 GA COMPOSITE DECK	6 1/2" NORMAL WT	STRUX 90/40 SYNTHETIC FIBER	5.0 LBS/CU YD						
S4	3" - 20 GA COMPOSITE DECK	3" NORMAL WT	STRUX 90/40 SYNTHETIC FIBER	5.0 LBS/CU YD						
D1	3" - 20 GA TYPE N ROOF DECK	NA	NA	NA						
D2	3 1/2" - 16 GA ROOF DECK OR 4 1/2" - 18 GA ROOF DECK	NA	NA	NA						
D3	1 1/2" - 20 GA TYPE N ROOF DECK	NA	NA	NA						

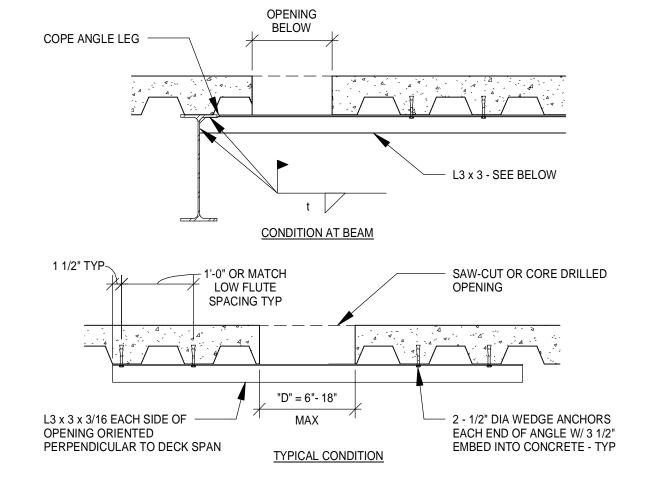
NOTES (UNO):

1. SEE TYPICAL DETAILS FOR DECK ATTACHMENT DETAILS.

2. SEE GENERAL STRUCTURAL NOTES FOR CONCRETE STRENGTH.

- 3. CONCRETE TOPPING THICKNESS IS FROM TOP OF DECK TO TOP OF CONCRETE 4. SEE PLANS AND DETAILS FOR ADDITIONAL REINFORCING AND REINFORCING PLACEMENT AT CONCRETE
- SLABS ON METAL DECK.
- 5. SEE SPECIFICATIONS FOR SYNTHETIC FIBERS. 6. ALL COMPOSITE DECK IS GALVANIZED. REFER TO SPECIFICATIONS FOR ROOF DECK FINISH.

FLOOR AND ROOF DECK SCHEDULE NO SCALE

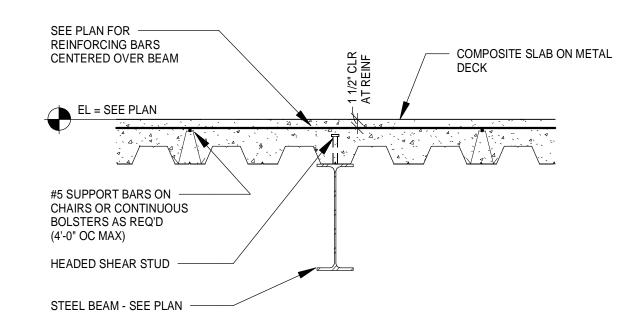


1. DO NOT OVER CUT CORNERS OF SQUARE OR RECTANGULAR OPENINGS

2. CLUSTER OF OPENINGS CONSIDERED TO BE ONE OPENING. PROVIDE SUPPORT ANGLES IF OPENINGS LOCATED WITH LESS THAN TWO TIMES "D" CLEAR BETWEEN OPENING EDGES. "D" IS LARGEST OF ADJACENT OPENING DIMENSIONS.

TYPICAL OPENING (6"-24" MAX) THROUGH SLAB

OVER METAL DECK



<u>NOTES (UNO):</u> 1. CUT HIGH DECK FLUTE WHEN IT OCCURS AT BEAM AND PROVIDE GIRDER FILLER DECK PIECE AS NECESSARY. 2. SEE TYPICAL DETAILS FOR DECK ATTACHMENT AND HEADED STUD INFORMATION

TYPICAL SECTION AT COMPOSITE DECK PARALLEL TO BEAM NO SCALE



Reynolds, Smith and Hills, Inc.

4525 Airport Approach Rd, Ste A Duluth, Minnesota 55811 218-722-1227 FAX 218-722-1052 www.rsandh.com



DULUTH INTERNATIONAL **AIRPORT** DULUTH, MN

NEW TERMINAL DESIGN

CONSULTANTS

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Structural Engineers: MBJ CONSULTING ENG. 501 Lake Avenue South, Suite 300, Duluth MN 55802 TEL: (218) 722-1056 / FAX: (218) 722-9306

> M/E/P/FP Engineers: COSENTINI

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BNP ASSOCIATES INC. 101 East Ridge Office Park, Suite 103, Danbury CT 06810 TEL: (203) 792-3000 / FAX: (203) 792-4900

Landscape Consultants: **APPOLD DESIGN** 2432 East First Street, Duluth MN 55812 TEL: (218) 591-5079

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the

laws of the State of Minnesota. Print Name: Paul A. Johnson

Date: June 3, 2010 Reg. No.: 20379

REVISIONS DESCRIPTION DATE Conformance Set 07-12-10 **DATE ISSUED:** 07-12-10

REVIEWED BY: PAJ / CWB DRAWN BY: SJL

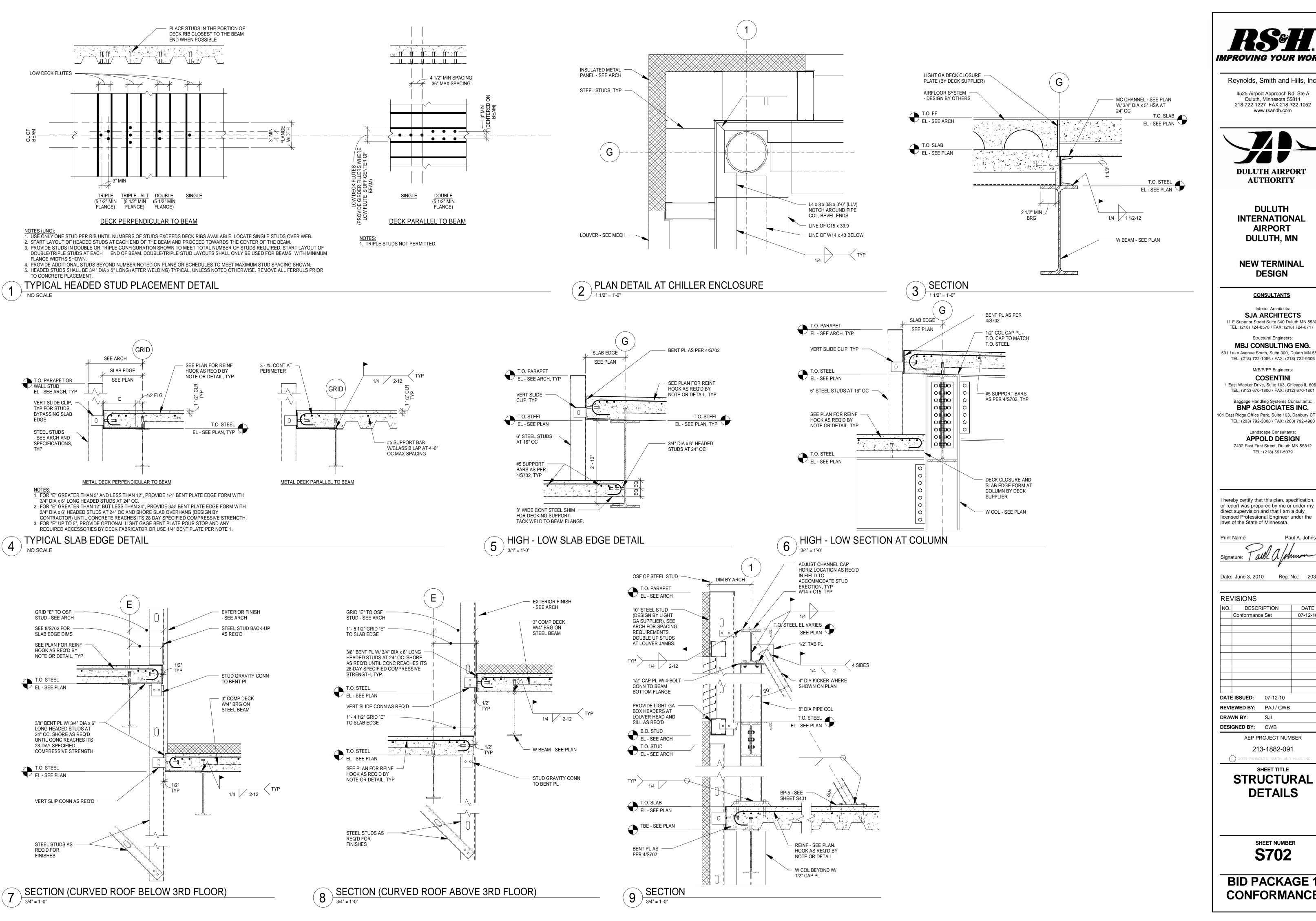
DESIGNED BY: CWB AEP PROJECT NUMBER

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SHEET TITLE

STRUCTURAL DETAILS

> SHEET NUMBER **S701**





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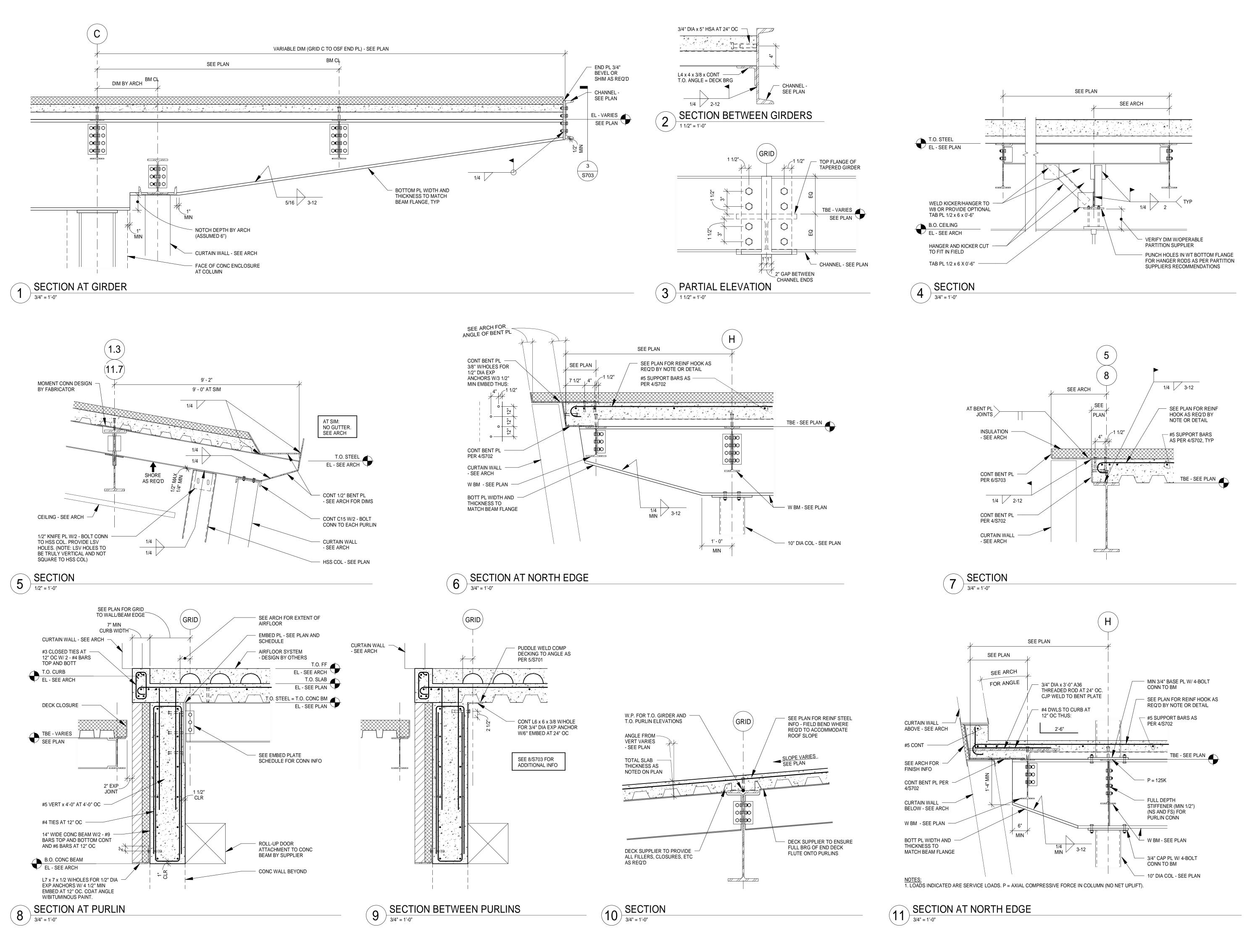
DESIGNED BY: CWB

AEP PROJECT NUMBER 213-1882-091

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SHEET TITLE **STRUCTURAL DETAILS**

> SHEET NUMBER **S702**



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NO.	DESCRIPTION	DATE
	Conformance Set	07-12-1

DATE ISSUED: 07-12-10

REVIEWED BY: PAJ / CWB

DRAWN BY: SJL

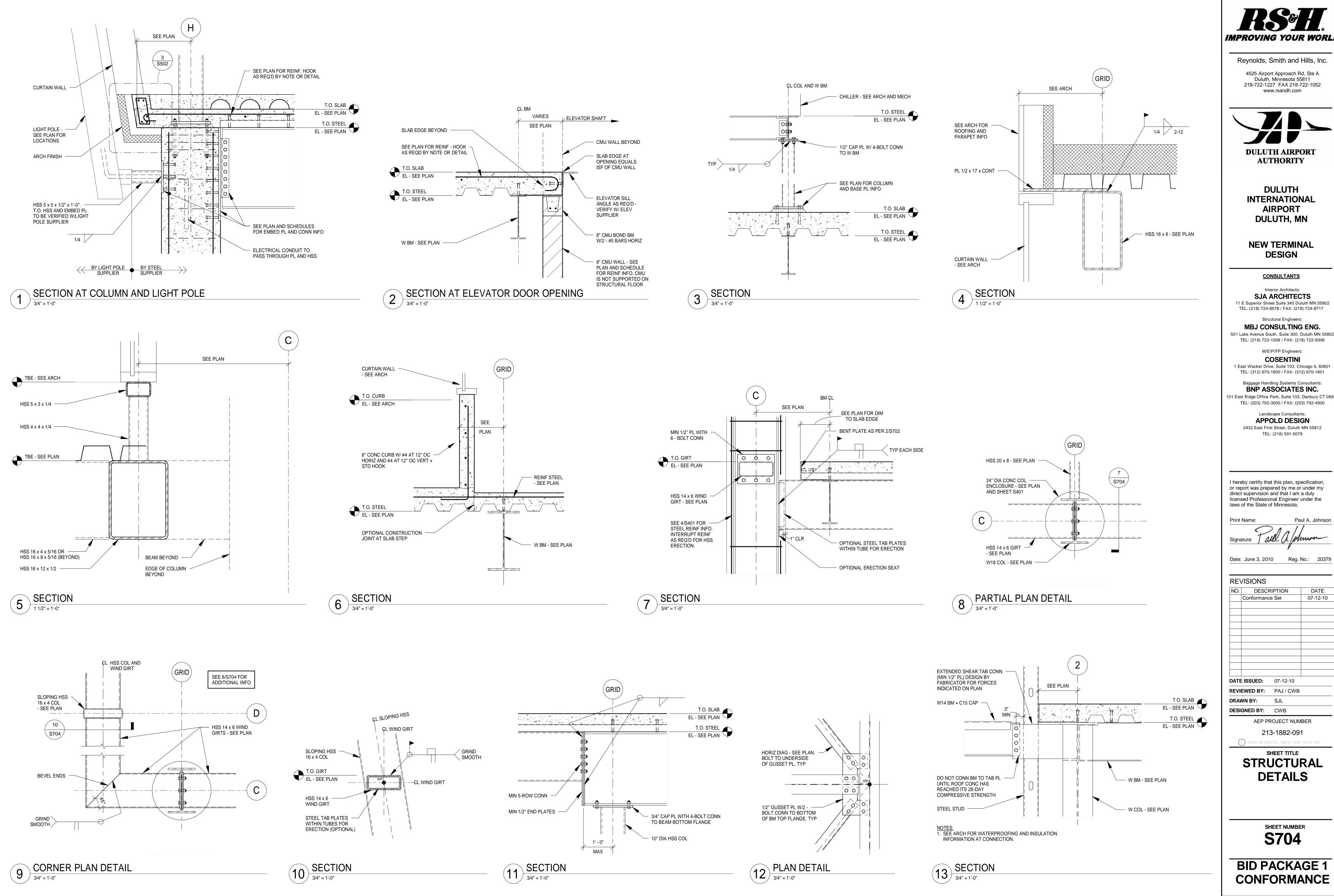
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SHEET TITLE

STRUCTURAL DETAILS

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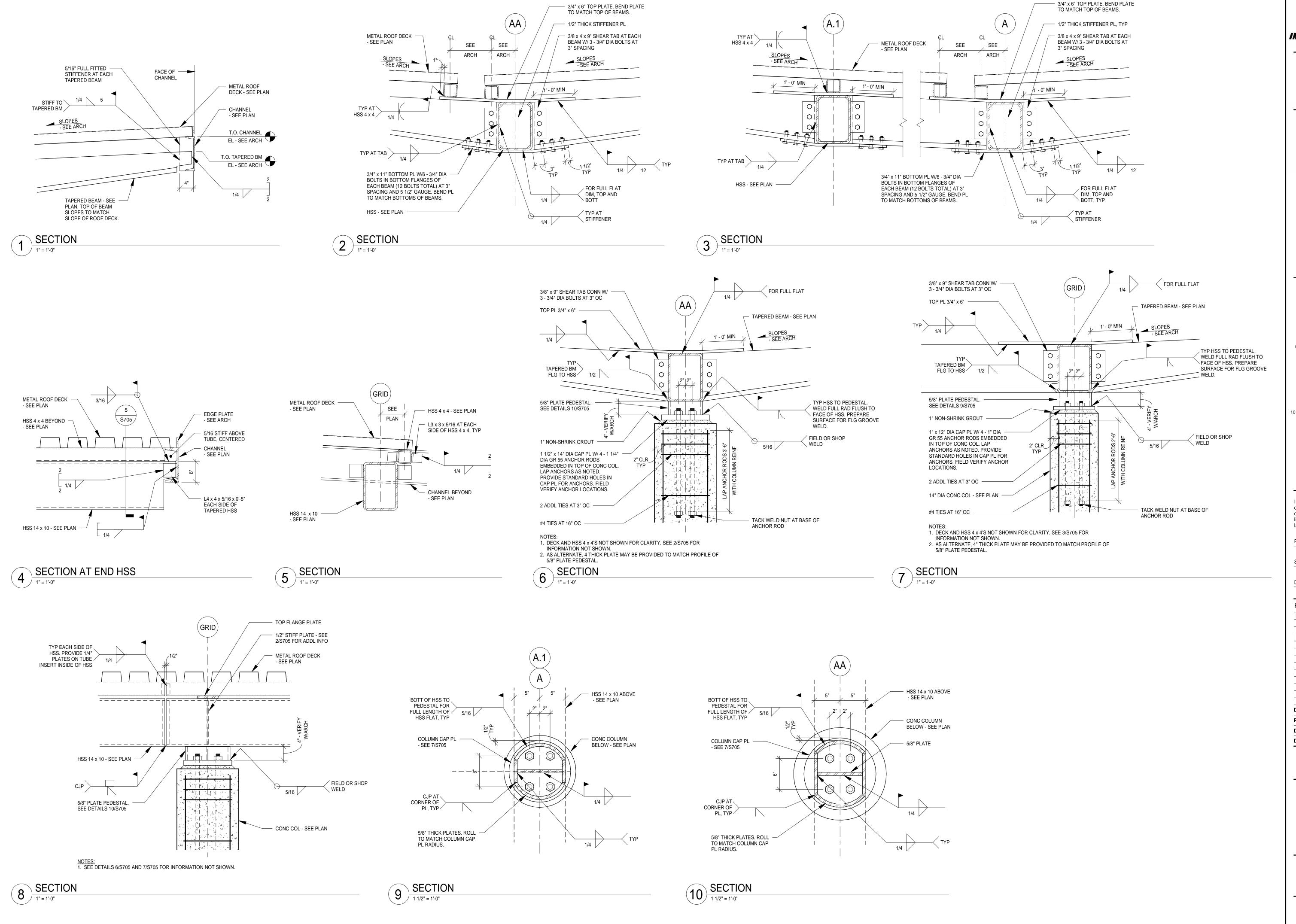
SJL DRAWN BY: **DESIGNED BY:** CWB

> AEP PROJECT NUMBER 213-1882-091

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SHEET TITLE **STRUCTURAL DETAILS**

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DATE ISSUED: 07-12-10 **REVIEWED BY:** PAJ / CWB DRAWN BY: SJL

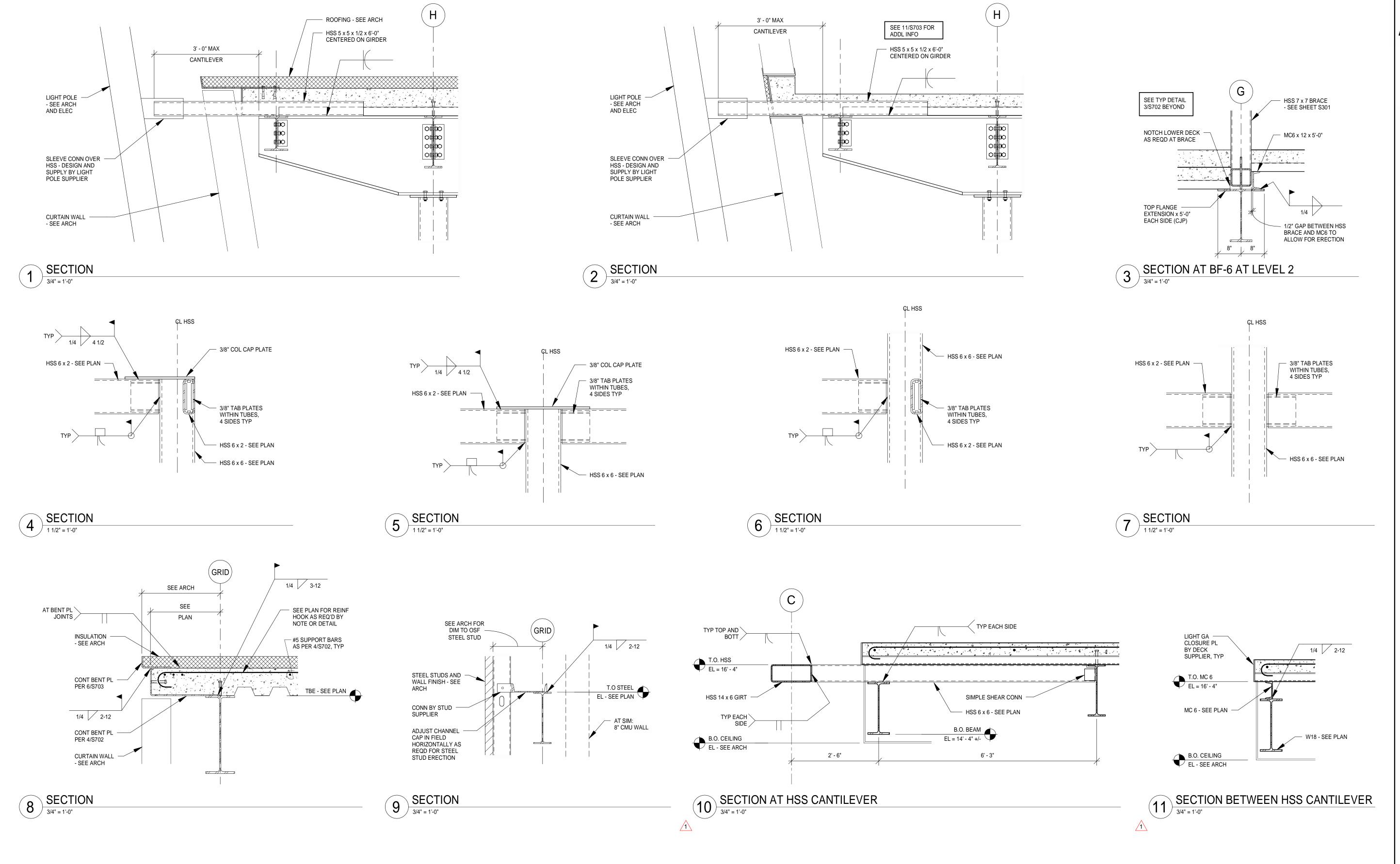
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1	Addendum 1	06-10-10						
	Conformance	07-12-10						
DATE	ISSUED:	07-12-10						
REVI	EWED BY:	PAJ / CWB						
DRA	WN BY:	SJL						

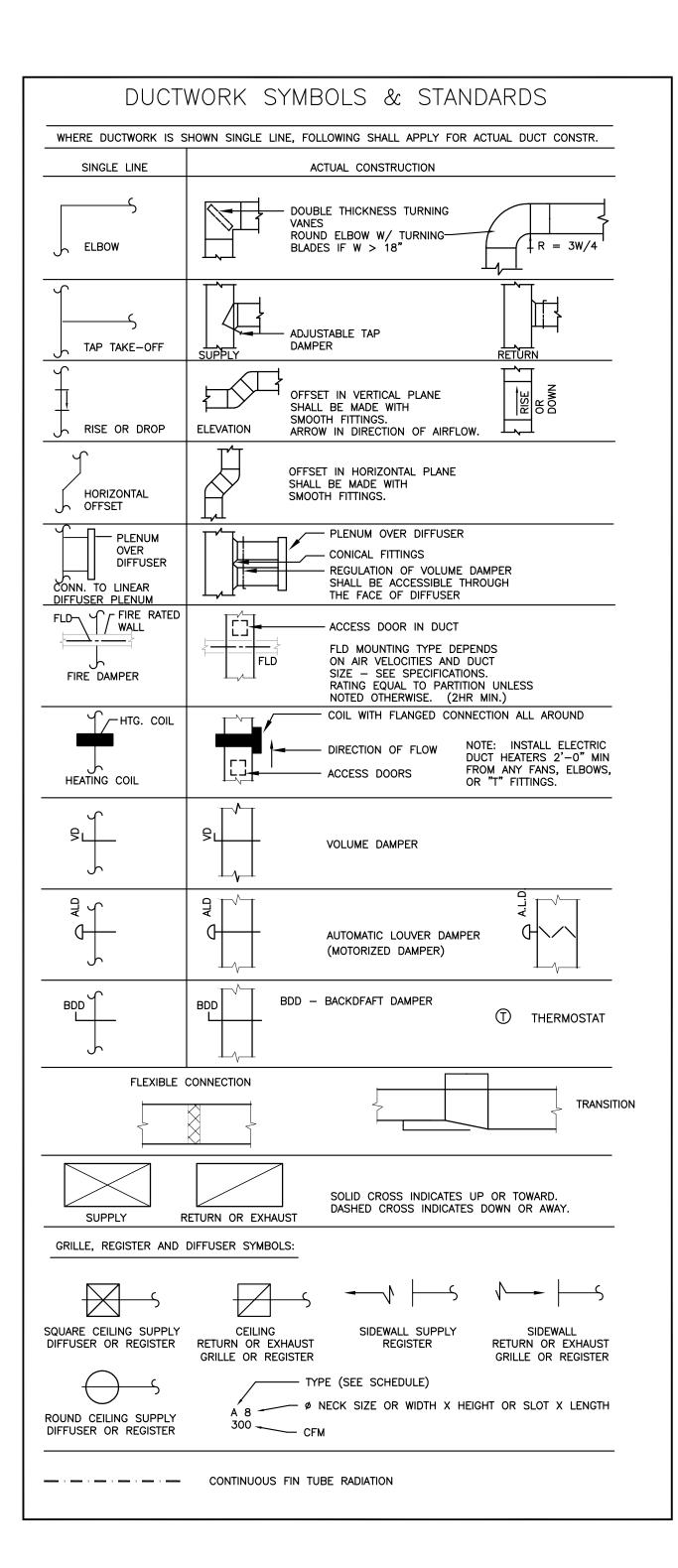
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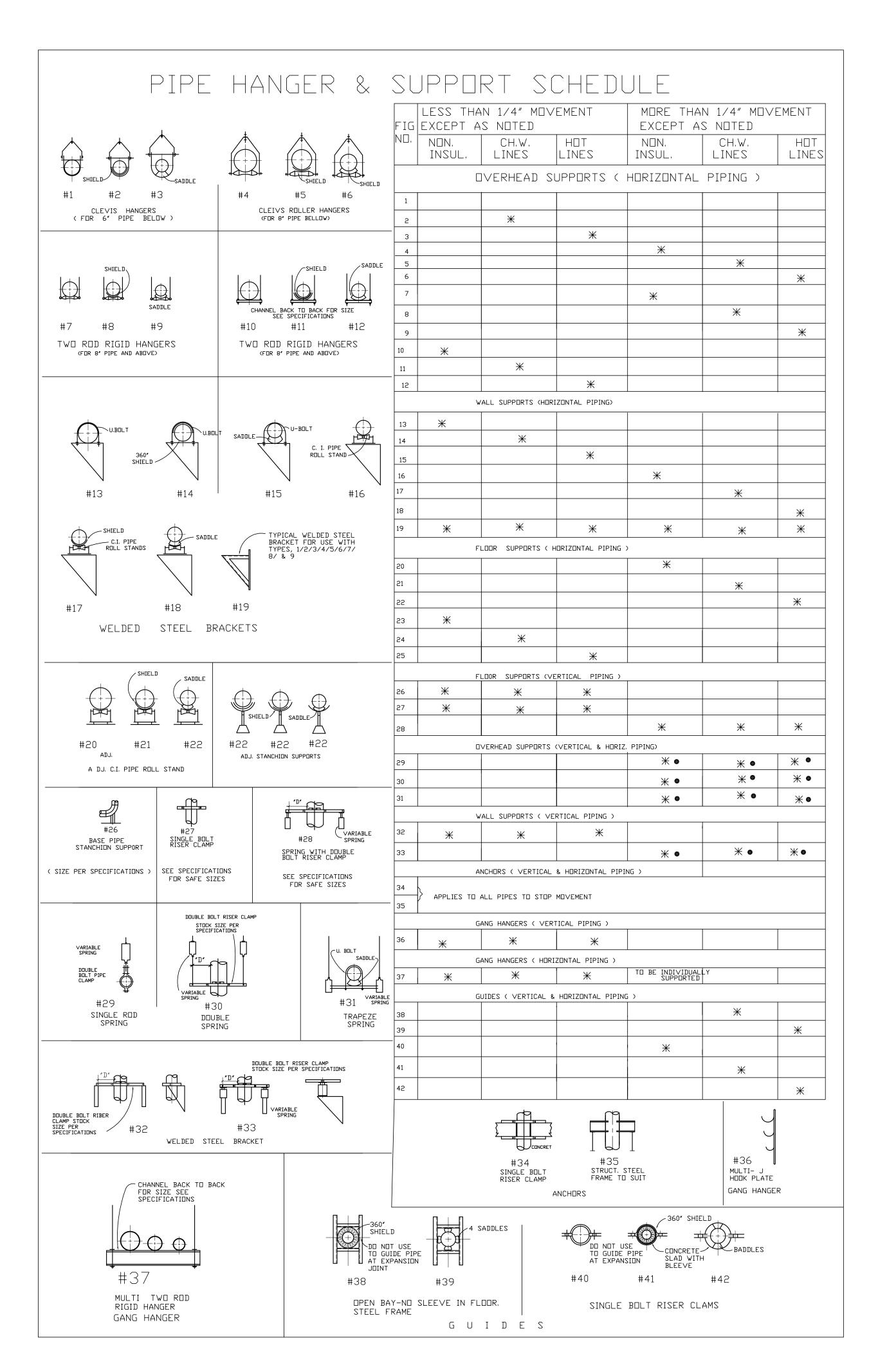
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SHEET TITLE **STRUCTURAL DETAILS**

> SHEET NUMBER **S706**





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		DATE	11/30/09	02/11/10	04/12/10	05/07/10	06/02/10	07/12/10			
		ISSUED FOR	DESIGN DEVELOPMENT	CONSTRUCTION DOCUMENTS	90% CONSTRUCTION DOCUMENTS	PACKAGE 1	SITE WORK AND FNDN PERMIT	PACKAGE 1 CONFORMANCE			
		SSI	DE	%09	%06	BID	SIT	BID			
M001	DESCRIPTION MECHANICAL LEGEND		-	_	-	-	<u> </u>	_			+
M001 M002	MECHANICAL LEGEND MECHANICAL SYMBOLS		•	•	•	•	•	•			+
10002	WECHANICAL STWIBULS		•	•	•	•	•	•			+
M108	ENLARGED UNDERGROUND MECHANICAL PLAN - AREA A										\dagger
M109	ENLARGED UNDERGROUND MECHANICAL PLAN - AREA B		•		•		•				+
M110	ENLARGED FIRST FLOOR MECHANICAL PLAN - AREA A										\dagger
M111	ENLARGED FIRST FLOOR MECHANICAL PLAN - AREA B										t
M112	ENLARGED SECOND FLOOR MECHANICAL PLAN - AREA A		•	•	•						t
M113	ENLARGED SECOND FLOOR MECHANICAL PLAN - AREA B		•	•	•						t
M114	ENLARGED THIRD FLOOR MECHANICAL PLAN - AREA A		•	•	•						t
M115	ENLARGED THIRD FLOOR MECHANICAL PLAN - AREA B		•	•	•						Ť
M116	ENLARGED ROOF LEVEL MECHANICAL PLAN - AREA A				•						1
M110	ENLARGED FIRST FLOOR MECHANICAL PIPING PLAN - AREA A				•						+
M111	ENLARGED FIRST FLOOR MECHANICAL PIPING PLAN - AREA B				•						t
M112	ENLARGED SECOND FLOOR MECHANICAL PIPING PLAN - AREA A				•						t
M113	ENLARGED SECOND FLOOR MECHANICAL PIPING PLAN - AREA B				•						t
M114	ENLARGED THIRD FLOOR MECHANICAL PIPING PLAN - AREA A				•						t
M115	ENLARGED THIRD FLOOR MECHANICAL PIPING PLAN - AREA B				•						1
M201	DIESEL GENERATOR MECHANICAL PLAN & DETAILS		•	•	•						ł
M202	MECHANICAL SECTIONS & ELEVATIONS				•						I
M301	HEATING HOT WATER FLOW DIAGRAM		•	•	•						ł
M302	CHILLED WATER FLOW DIAGRAM		•	•	•						†
M303	AIRSIDE RADIANT SLAB FLOW DIAGRAM & DETAILS		•	•							#
M401	MECHANICAL EQUIPMENT SCHEDULES I										+
M402	MECHANICAL EQUIPMENT SCHEDULES II		•	•	•						\dagger
											Ť
M501	MECHANICAL DETAILS I		•	•	•	•	•	•			Ţ
M502	MECHANICAL DETAILS II		•	•	•						\int
M503	MECHANICAL DETAILS III		•	•	•						Ţ
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GENERAL NOTES:

ASHRAE STANDARD 55-2004

1. ALL WORK SHALL CONFORM TO THE FOLLOWING CODES AND STANDARDS AT A MINIMUM:

2007 MINNESOTA STATE BUILDING CODE
2007 MINNESOATE STATE MECHANICAL AND FUEL GAS CODES
2007 COMMERCIAL ENERGY CODE
MINNESOTA SUSTAINABLE BUILDING GUIDELINES (REQUIRED SECTIONS ONLY)
ASHRAE STANDARD 90.1–2007
ASHRAE STANDARD 62.1–2007



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AUTHORITY

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NEW PASSENGER TERMINAL

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Landscaping Consultants:

APPOLD DESIGN

2432 East First Street, Duluth MN 55812

TEL: (218) 591-5079

 NO.
 DESCRIPTION
 DATE

 1
 ADDENDUM 1
 6.11.10

 CONFORMANCE SET
 7.12.10

REVIEWED BY: MXB

DRAWN BY: JEH

DESIGNED BY: MXB

DATE ISSUED: 07-12-10

AEP PROJECT NUMBER 213-1882-091

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MECHANICAL LEGEND

SHEET NUMBER

M001

----- HHWS ----- HOT WATER SUPPLY

----- HHWR ----- HOT WATER RETURN

——— G ——— GAS

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MECHANICAL SYMBOLS

SHEET NUMBER

M002

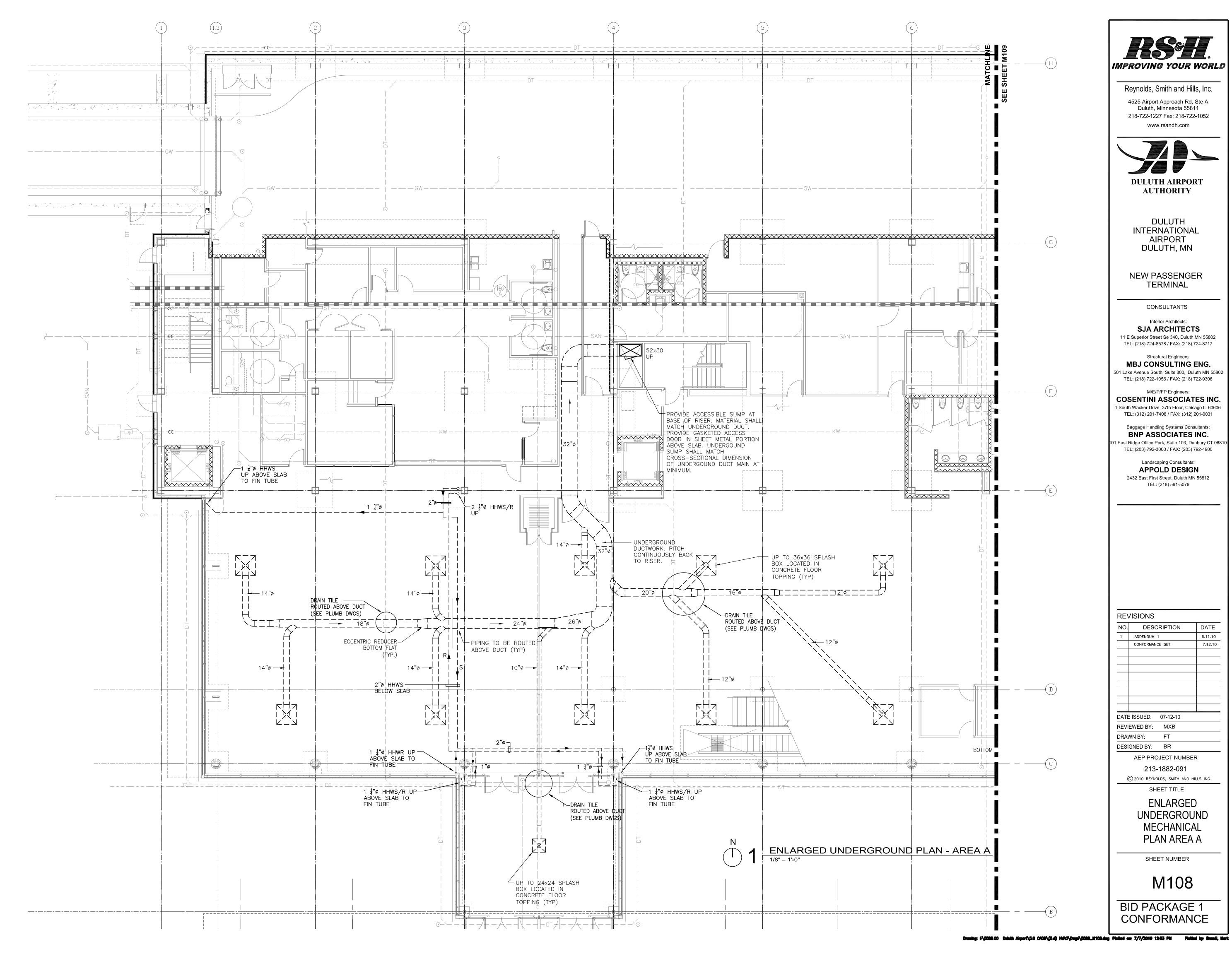
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Drawing: E\5538.00 Duluth Airport\5.0 CHOD\(5.4) HMC\Duge\5538_M002.dug Plotted on: 7/2/2010 11:25 AM Plotted by: Brandi, Mark

GENERAL NOTES:

1. ALL UNDERGROUND PIPING SHALL BE STUBBED 12" ABOVE TOP OF STRUCTURAL SLAB AND CAPPED WITH NON-METALLIC REMOVABLE PLUG. CONTRACTOR IS RESPONSIBLE FOR PROVIDING PROTECTION FOR PIPE STUBS AFTER SLAB POUR. SEE M501.

2. SEE DETAILS ON M501 FOR CAPPING OF UNDERGROUND DUCT.





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DULUTH AIRPORT AUTHORITY

DULUTH INTERNATIONAL AIRPORT DULUTH, MN

NEW PASSENGER TERMINAL

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REVISIONS DATE DESCRIPTION 6.11.10 ADDENDUM 1 7.12.10 DATE ISSUED: 07-12-10 REVIEWED BY: MXB DRAWN BY: DESIGNED BY: BR

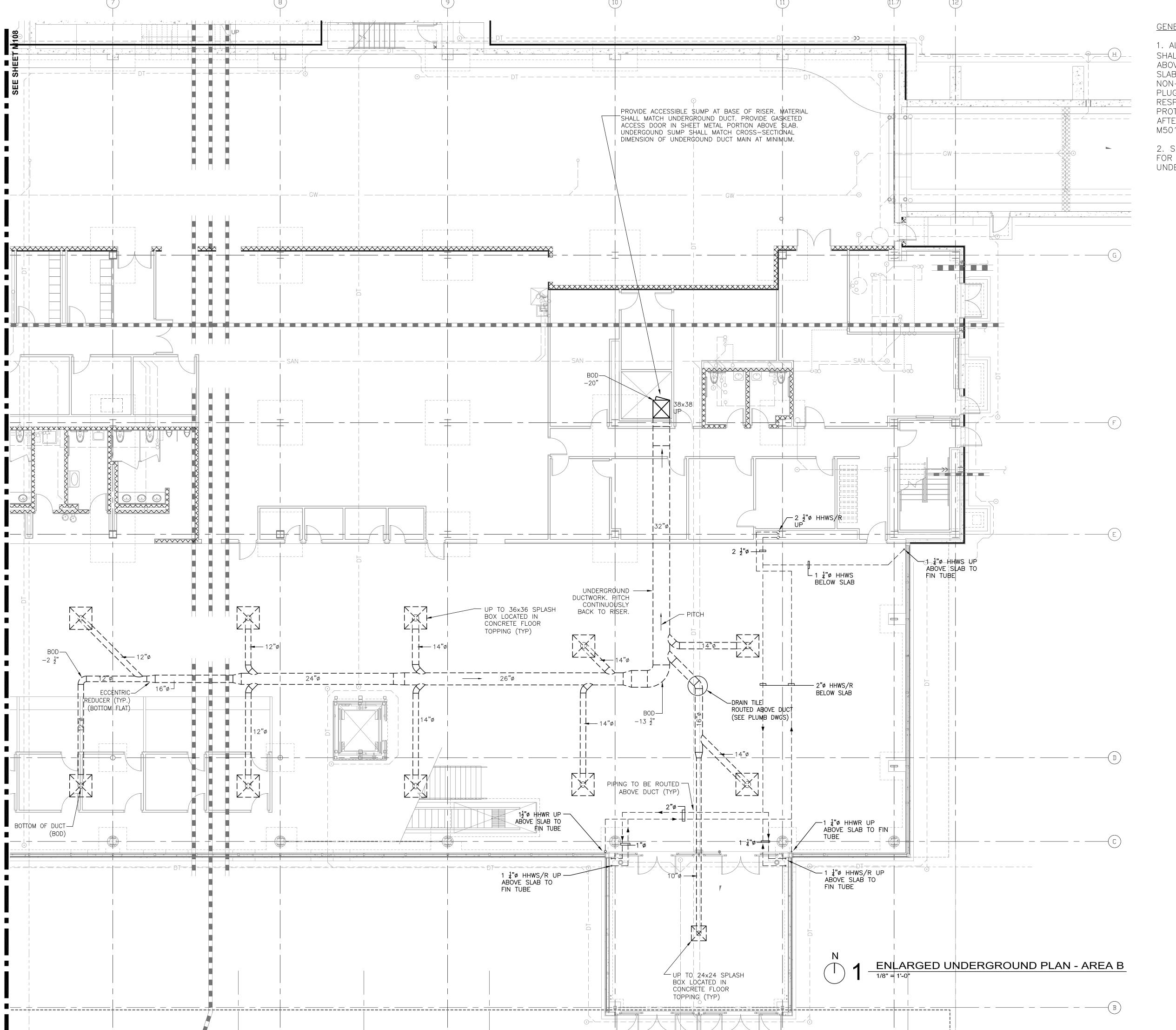
AEP PROJECT NUMBER 213-1882-091

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> **ENLARGED** UNDERGROUND **MECHANICAL** PLAN AREA A

SHEET NUMBER

M108



GENERAL NOTES:

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2. SEE DETAILS ON M501 FOR CAPPING OF UNDERGROUND DUCT.



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DRAWN BY: FT
DESIGNED BY: BR

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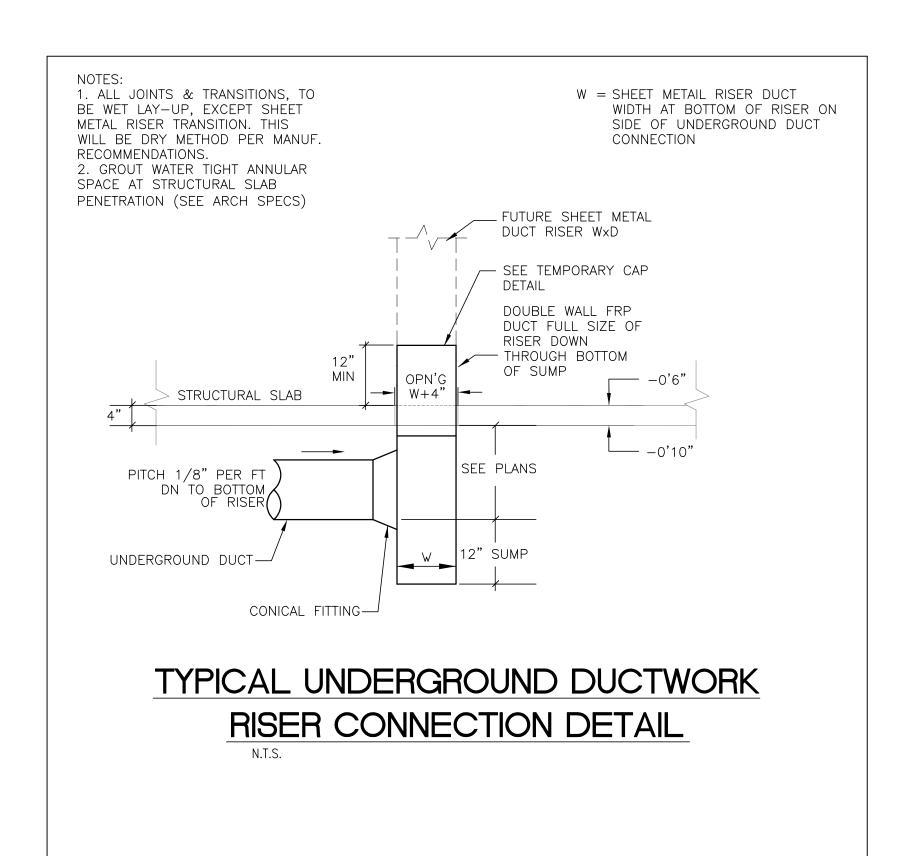
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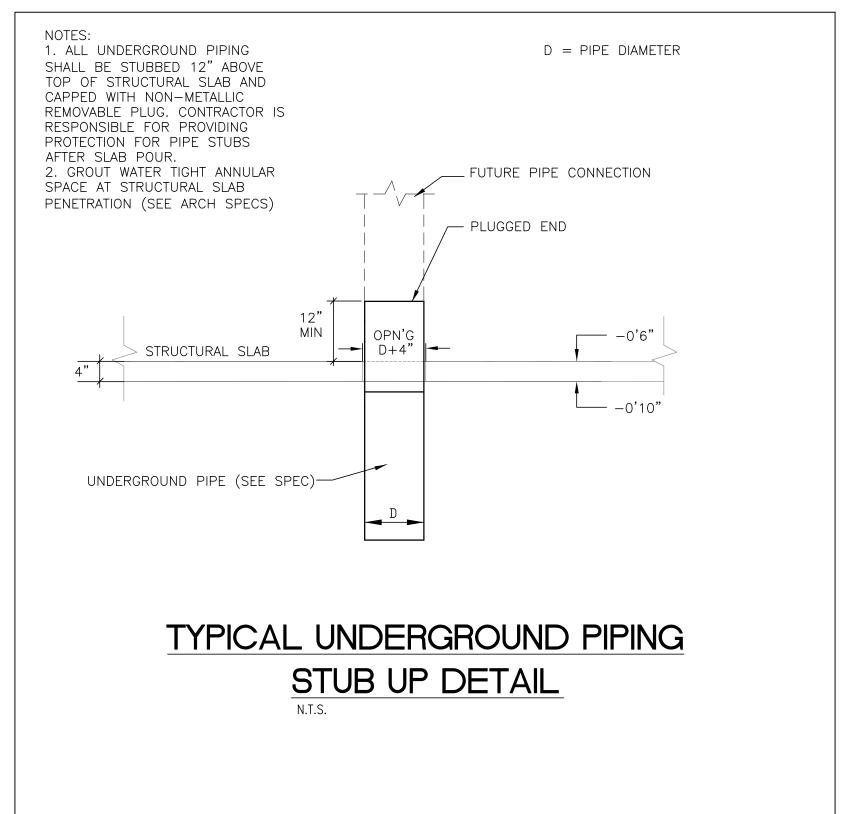
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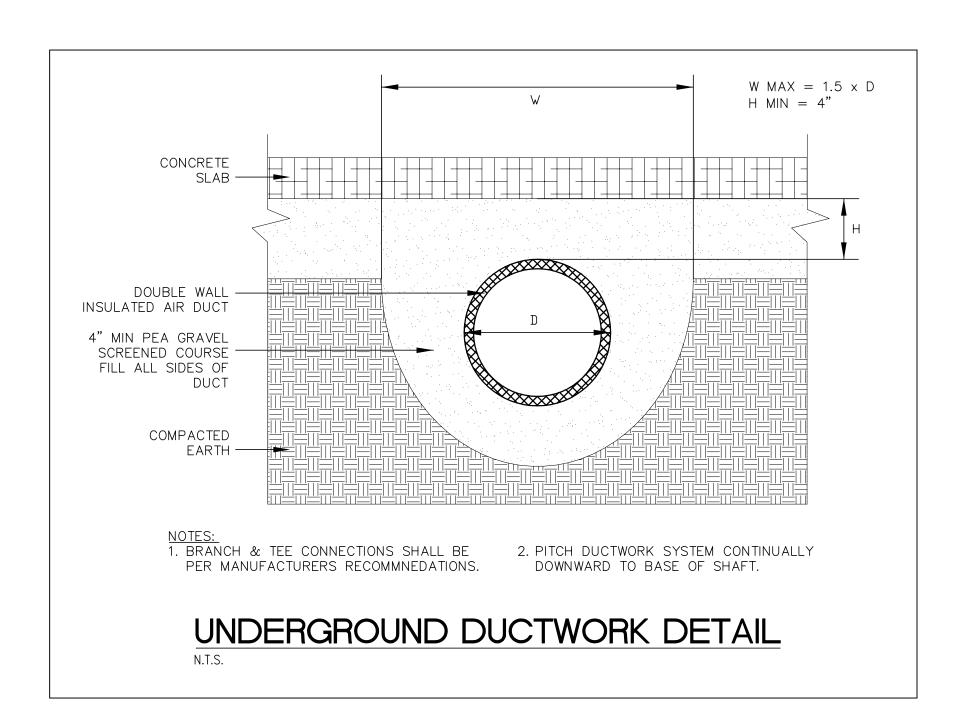
M109

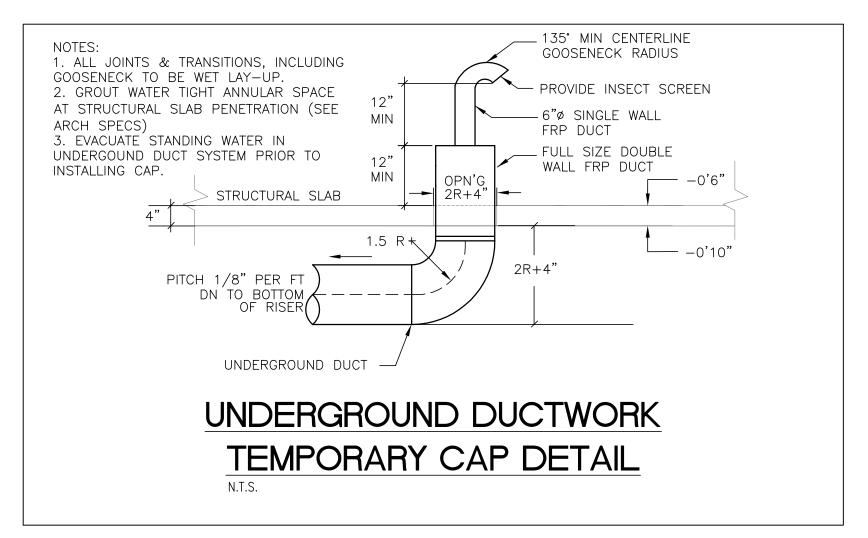
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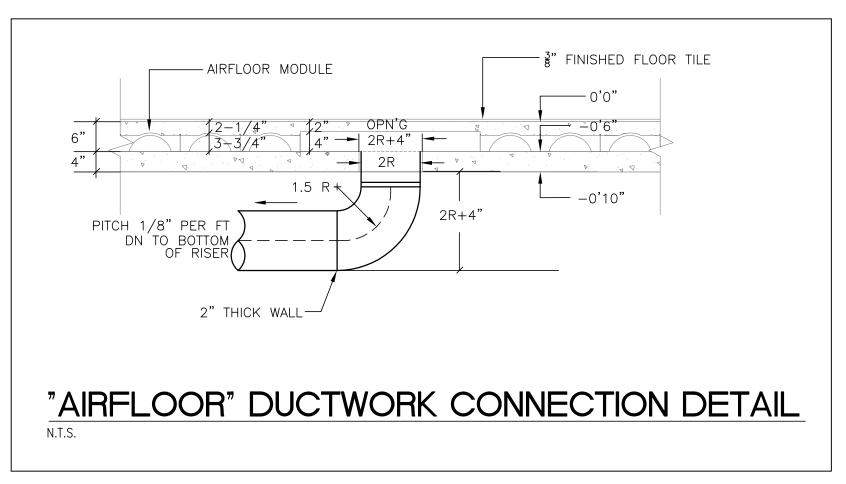
B.00 Dubth Airport\S.O CNDD\(5:d) HMC\Duge\S528_M108.dug Plotted on: 7/7/2010 12:48 PM Plotted by: Brandi, Mark













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 NO.
 DESCRIPTION
 DATE

 1
 ADDENDUM 1
 6.11.10

 CONFORMANCE SET
 7.12.10

DATE ISSUED: 07-12-10

REVIEWED BY: MXB

DRAWN BY: JEH

DESIGNED BY: XX

AEP PROJECT NUMBER

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SHEET TITLE

MECHANICAL DETAILS I

SHEET NUMBER

M501

BID PACKAGE 1 CONFORMANCE

Drawing: E\5538.00 Duluth Airport\5.0 CHOD\(5.4) HMC\Dugo\5538_M501.dug Plotted on: 7/7/2010 12:43 PM Plotted by: Brandi, Mark

SYMBOL	DESCRIPTION	NOTES	SYMBOL	DESCRIPTION		NOTES
		TING FIXTURES		FIRE PROT	ECTIVE ALARM SYSTEN JATING DEVICES	
F1	CEILING MOUNTED	UPPER CASE LETTERS INSCRIBED IN SYMBOL INDICATE FIXTURE TYPE		MANUAL FIRE ALARM ACTUATING DEVICE	SUBSCRIPT -K- DENOTES STRAP	SUBSCRIPT NUM- BERS INDICATE
F2		REFERENCES TO FIXTURE LIST SUBSCRIPT LOWER CASE LETTERS IN- DICATE SWITCH CONTROL ASSOCIA-	S WF	OR STATION SPRINKLER ALARM ACTUATING DEVICE	KEY STATION SUBSCRIPT UPPER CASE LETTERS DE-	ZONE OR CIRCUIT SUBSCRIPT LOWER
F1 F1	WALL MOUNTED	INIDCATES EMERGENCY LIGHTING:	VSS	VALVE SUPERVISOR SWITCH	NOTE THE FOLLOW- ING:- a-main alarm	CASE LETTERS IN QUOTES DENOTE EXCEPTIONS TO SPECIFIED STAN-
F4 	LIGHTING FIXTURES FLOOR MOUNTED				valve waterflow detector WWATERFLOW DE-	DARD MOUNTING AS FOLLOWS:- "f" - flush
0	LIGHTING FIXTURE				TECTOR T-TAMPER SWITCH	"sf" -semiflush "s" - surface "d" - in duct
		EXIT SIGNS			F-FLOAT SWITCH	SUBSCRIPT ROMAN NUMERALS DENOTE
∤∑	WALL MOUNTED EXIT SIGN	APPLICATION OF SHADED QUADRANTS AND ARROWS THUS:			FR-FIRE PUMP RUN- NING ALARM RELAY CONTACTS	SYSTEM WHERE THERE IS MORE THAN ONE.
⊗	CEILING MOUNTED EXIT SIGN	INDICATE LETTERED FACE AND DIREC- TIONAL ARROWS AT SYMBOLS FOR SIGNS FOR WHICH SELECTION OF SUCH			fp-fire pump pow- er available alarm relay con- tacts	SYMBOLS AS SHOWN REPRESENT WALL MOUNTED DEVICES —CIRCUMSCRIBED CIRCLES THUS:-
		FEATURES IS REQUIRED. SUBSCRIPT DESIGNATIONS XA, XB, XC, ETC. INDICATE EXIT SIGN TYPE REF- ERENCES TO LIGHTING FIXTURE LIST.			P-AIR PRESSURE SWITCH DF-DRY PIPE AIR COMP.	DENOTE CEILING MOUNTING EXCEPT THAT FOR AUTO- MATIC FIRE DE-
		BOXES – SECONDARY			power failure	TECTION ACTUATING DEVICES
Ю	PULL BOX OR JUNCTION BOX-OUTLET BOX TYPE WALL MOUNTED	POWER WIRING			DP-DRY PIPE air comp. low air comp	AS SHOWN DENOTE CEILING MOUNTED DEVICES AND CIR- CUMSCRIBED CIR- CLES DENOTE
O)	PULL BOX OR JUNCTION BOX-OUTLET BOX TYPE MOUNTED AT CEILING		SD	AUTOMATIC FIRE DETECTION ALARM ACTUATING DEVICES	SUBSCRIPT UPPER CASE LETTERS DE- NOTE THE FOLLOW-	MOUNTING IN RAISED FLOOR. SUBSCRIPT UPPER
JB	JUNCTION BOX		DD	SMOKE DETECTOR DUCT SMOKE DETECTOR	ING:RT-FIRESTAT- RATE OF	CASE LETTERS IN PARENTHESIS DE- NOTE DEVICE FUNCTION THUS:-
				HEAT DETECTOR	RISE PLUS FIXED TEM- PERATURE TYPE	(TE)-TOCCC EVACUATION (FE)-FLOOR EVACUATION
	SECON	DARY FEEDERS	D		-FT-FIRESTAT— FIXED TEM- PERATURE TYPE	
	CEALED ABOVE AS PER BASIC REQUIREMENTS FOR THE INSTALLATION OF CIRCUITRY.		SD	BEAM TYPE SMOKE DETECTOR SUBSCRIPT "T" INDICATES TRANSMITTER SUBSCRIPT "R" INDICATES RECEIVER	-PM-PNEUMATIC TUBE DIA- PHRAGM SWITCH	
<u> </u>	FEEDER RUN CON- CEALED BELOW AS PER BASIC REQUIREMENTS FOR THE INSTALLATION OF CIRCUITRY.		•	ELECTRIC DOOR LOCK	SUBSCRIPT NUM- BERS IN PAREN- THESIS AT SYM- BOLS REPRESENT-	
•	FEEDER RUN EXPOSED AS PER BASIC RE- QUIREMENTS FOR THE INSTALLATION OF		DTU	DATA TRANSMISSION UNIT	ING FIRESTATS DENOTE EXCEP- TIONS TO SPECI- FIED STANDARD TEMPERATURE	
	FIRE PROTEC	CTIVE ALARM SYSTEMS			SETTINGS SUBSCRIPT NUM-	
<u>(S)</u>	SPEAKER SPEAKER	SUBSCRIPT -P- DENOTES PRESIGNAL SUBSCRIPT -T- DENOTES TROUBLE SIGNAL			BERS IN PAREN- THESIS AT SYM- BOLS REPRESENT- ING PNEUMATIC TUBE DIAPHRAGM	
(SV)	w/ VISUAL ALARM DEVICE	SYMBOLS AS SHOWN REPRESENT CLG MOUNTED DEVICES—CIRCUMSCRIBED CIRCLES THUS:-			SWITCHES DENOTE LENGTH OF ASSO- CIATED TUBING	
V	VISUAL ALARM DEVICE	DENOTE WALL MOUNTING	SYMBOL	DESCRIPTION		NOTES
		SYMBOLS WITH LOWER PORTION LEFT UNSHADED DENOTE THAT THE ITEMS ARE PART OF AN OVERALL FIRE PRO-			ING DEVICES	LWITHOUT CHROODIDT
		TECTIVE ALARM SYSTEM INSCRIBED SHADING IN LOWER POR- TION DENOTES THAT THE ITEMS ARE	\$	WIRING DEVICE TYPE SWITCH	WITHOUT SUB- SCRIPT NUMBER SYMBOL DENOTES	WITHOUT SUBSCRIPT UPPER CASE LETTERS SYMBOLS DENOTE WIRING DEVICE
		PART OF A SEPARATE SYSTEM WHICH INCORPORATES ACTUATING DEVICES REPRESENTED BY SIMILARLY SHADED SYMBOLS	\$ ^T	SWITCH WITH THERMAL OVERLOAD PROTECTION FOR 120V FRACTIONAL HP MOTORS	"SINGLE POLE" SUBSCRIPT NUMBERS DE-	STANDARD AS SPECIFIED. SUBSCRIPT UPPER
		SUBSCRIPT LOWER CASE LETTERS IN QUOTES DENOTE EXCEPTIONS TO SPECIFIED MOUNTING AS FOLLOWS:	<u> </u>	KEY OPERATED SWITCH	NOTE -2 POLE- -3 WAY-, -4 WAY-, ETC.	CASE LETTERS DE- NOTE NON STAND- ARD TYPE REFER- ENCE TO SCHEDULE
		"f" - flush "s" - surface			SUBSCRIPT LETTERS IN PARENTHESIS	OF NON STANDARD WIRING DEVICES.
	В	CTIVE ALARM SYSTEMS ASIC ITEMS			THUS:- (PL)	SUBSCRIPT LOWER CASE LETTERS IN- DICATE SWITCH
FCP	OF SYSTEM			AREA OF RESCUE	INDICATE SEPARATE	CONTROL ASSOCCIA- TIONS.
FAA	OUTLYING ANNUN CIATOR			ASSISTANCE INTERCOM STATION	PILOT LIGHT.	

SYMBOL	DESCRIPTION	NOTES
	Wif	RING DEVICES (CONT)
	WALL DUPLEX CON-	SHADING OF "D" INDICATES DEDICATE
Ψ	VENIENCE RECEPTACLE	SYMBOL THUS:- RECEPTACLE
#	WALL DOUBLE DUPLEX (QUAD) CONV. RECEPT.	INDICATES RECEPTACLE WITH EACH
#	GFI (GROUND FAULT INTERRUPTING) WALL DUPLEX CON- VENIENCE RECEPTACLE	HALF SEPAR- ATELY WIRED (HALF CON- STANT, HALF SWITCH CON- TROLLED)
Ф	WALL SINGLE CON- VENIENCE RECEPTACLE	
PS	POWER SUPPLY FOR ACCESS CONTROL	
	QUAD RECEPTACLE IN FLUSH FLOOR BOX	
\ominus	DUPLEX RECEPTACLE IN FLUSH FLOOR BOX	
⊕ _P	QUAD RECEPTACLE PENDANT MOUNTED FROM CEILING	
\ominus	CEILING CONVENIENCE RECEPTACLE	
•	WALL SPECIAL PURPOSE POWER SUPPLY RECEP- TACLE	
\(\)	FLOOR SPECIAL PUR- POSE POWER SUPPLY RECEPTACLE	
-	CEILING SPECIAL PUR- POSE POWER SUPPLY RECEPTACLE	GANGING SYMBOL SHOWN IN CIRCUITRY RUN IN COMBINATION WITH ANY WIRING DEVICE SYMBOLS THUS:- DENOTES WIRING DEVICES WHICH ARE
	WIRING DEVICE GANGING SYMBOL	TO BE GANGED IN A SINGLE COMMON PLATE OUTLET.
		D INDIVIDUALLY MOUNTED DEVICES ONDARY LIGHT AND POWER WIRING
	MOTORS IN MECHANI- CAL SYSTEM EQUIP- MENT.	COMPLETE INFORMATION FOR MOTORS IS INDICATED BY APPLICATION OF TAG SYMBOL REFERENCE TO MOTOR LIST
	INDIVIDUALLY MOUNTED SECONDARY OVERCURRENT AND	COMPLETE INFORMATION FOR DEVICES IS INDICATED BY APPLICATION OF TAG SYMBOLSOMISSION OF TAG
H	SWITCHING DEVICES (CIRCUIT BREAKERS, FUSIBLE SWITCHES, UNFUSED SWITCHES, ETC.) APPLIED AS SPECIFIED.	SYMBOLS DENOTES DEVICES WHICH ARE NOT PART OF ELECTRIC WORK— IN THIS INSTANCE SUBSCRIPT NUMBERS ARE USED TO INDICATE SIZE OF FUSING WHERE REQUIRED (3 POLE FUSING UNLESS NOTED).
	MOTOR STARTER FOR MOTORS IN MECHANICAL SYS- TEM EQUIPMENT.	SUBSCRIPT NUM- BERS INDICATE FUSING WHERE REQUIRED (3 POLE FUSING UNLESS NOTED). COMPLETE INFOR- MATION FOR MOTOR CONTROL ITEMS IS INDI- CATED BY THE TAG SYMBOL RE-
		FERENCE APPLIED TO ASSOCIATED MOTORS—WHERE RELATION OF MOTORS TO CON- TROL ITEMS IS NOT EVIDENT, MOTOR TAG SYM- BOLS ARE REPEAT- ED AT SYMBOLS REPRESENTING THESE ITEMS TO CLARIFY THESE ASSOCIATIONS.
	POWER OR DISTRIBU- TION PANEL.	ARROW OF NOTE INDICATING PANEL DESIGNATION ALSO DENOTES FRONT FACE OF PANEL.
	LIGHTING OR APPLIANCE PANEL.	
<u> </u>	INDIVIDUALLY MOUNTED DRY TYPE TRANSFORMER PRIMARY VOLTAGE	SUBSCRIPT NUMBERS INDICATE KVA RATING.

SYMBOL	. DESCRIPTION	NOTES	SYMBOL	DESCRIPTION	NOTES
	LIGH	HTING CONTROL		Т.	AG SYMBOLS
Sos	WITH 2100SF, 180° COVERAG AMBIENT LIGHT LEVEL SENSO	E. SELF ADJUSTING R WITH MANUAL OVERRIDE.		SECONDARY FEEDER TAG SYMBOL	INFORMATION IS LISTED IN THE TAG SYMBOL THUS:- FEEDER DESIGNATION NUMBER AND SIZE OF CONDUITS NUMBER AND SIZE OF CONDUCTORS REFERENCE TO AN APPLICABLE NOTE
(S)	LIGHTING CONTROL WALL SWITCH INFRARED 120/277V OCCUPANCY SENSOR WITH 2100SF, 180° COVERAGE. SELF ADJUSTING AMBIENT LIGHT LEVEL SENSOR WITH MANUAL OVERRIDE. LEVITON CATALOG NUMBER ods15—id OR EQUAL. INFRARED CEILING—MOUNT SENSOR WITH 450SF, 360° COVERAGE. LEVITON CATALOG NUMBER osc04—i0w OR EQUAL RECEIVES LOW VOLTAGE POWER FROM SWITCHPACK AND RETURNS A LOW—VOLTAGE SIGNAL TO SWITCHPACK WHEN MOTION IS DETECTED. INFRARED CEILING—WOUNT SENSOR WITH 1500SF, 360° COVERAGE. LEVITON CATALOG NUMBER osc15—i0w OR EQUAL. RECEIVES LOW VOLTAGE POWER FROM SWITCHPACK AND RETURNS A LOW—VOLTAGE SIGNAL TO SWITCHPACK WHEN MOTION IS DETECTED.	NUMBER osc04-i0w OR GE POWER FROM A LOW-VOLTAGE SIGNAL TO		GECONDA DV INDIVI	CONDUIT SIZE INDICATED ALONE DENOTES A SINGLE CONDUIT.
659	INFRARED CEILING-MOUNT SE COVERAGE. LEVITON CATALOG EQUAL. RECEIVES LOW VOLTA SWITCHPACK AND RETURNS A	ENSOR WITH 1500SF, 360° NUMBER osc15—i0w OR GE POWER FROM A LOW—VOLTAGE SIGNAL TO		SECONDARY INDIVI- DUALLY MOUNTED OVER- CURRENT AND/OR SWITCHING DEVICE TAG SYMBOL	INFORMATION IS LISTED IN THE TAG SYMBOL THUS:- "600" OR "250" "2", "3", "3-N", INDICATES VOLT- AGE RANGE AT "2" POLE "3 POLE WHICH DEVICE IS "3 POLE PLUS TO OPERATE. NEUTRAL, "ETC.
					DEVICE SIZE IN AMPERES. "U" INDICATES THAT NO OVER- CURRENT PRO- TECTION IS RE- QUIRED—NUMBER INDICATES SIZE OF OVERCURRENT PROTECTION RE QUIRED.
					INDIVIDUALLY MOUNTED OVERCURRENT AND SWITCHING DEVICES ARE FOR SURFACE MOUNTING UNLESS THE TAG SYMBOL CARRIES AN EXTERNAL SUBSCRIPT "f" INDICATING FLUSH MOUNTING.



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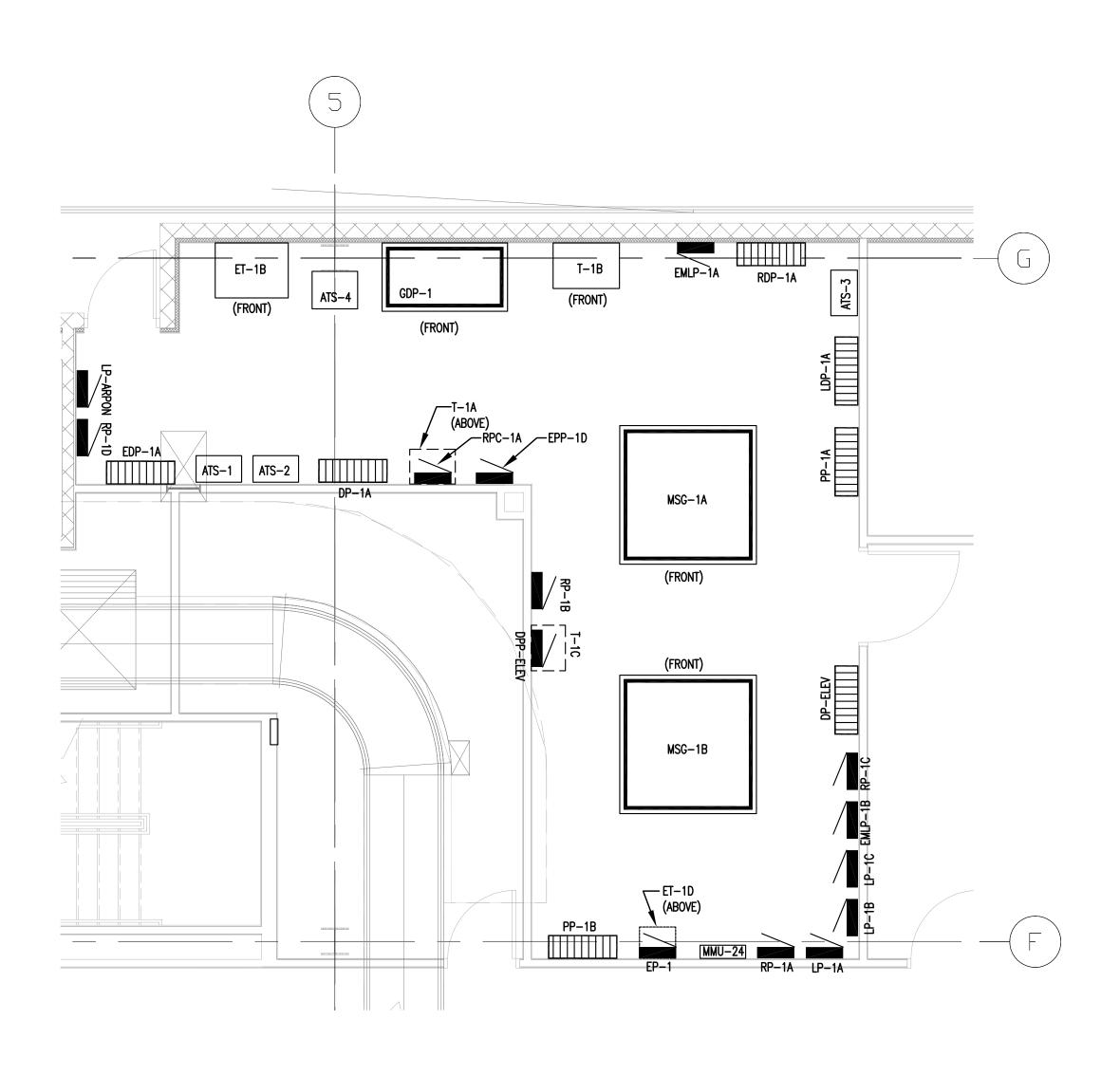
ELECTRICAL SYMBOLS

SHEET NUMBER

E001

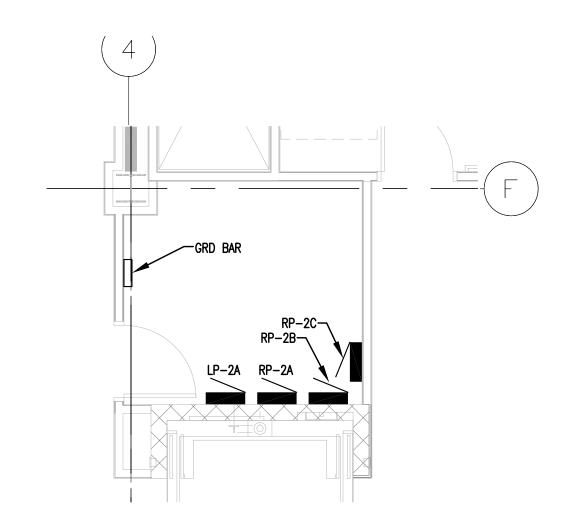
BID PACKAGE 1 CONFORMANCE

Druning: E\5528.00 Dubuth Airport\5.0 CADD\(5.b) Electrical\Duga\5528_E001.dug Plotted on: 7/14/2010 1:05 PM Plotted by: Kuether, Jennifer



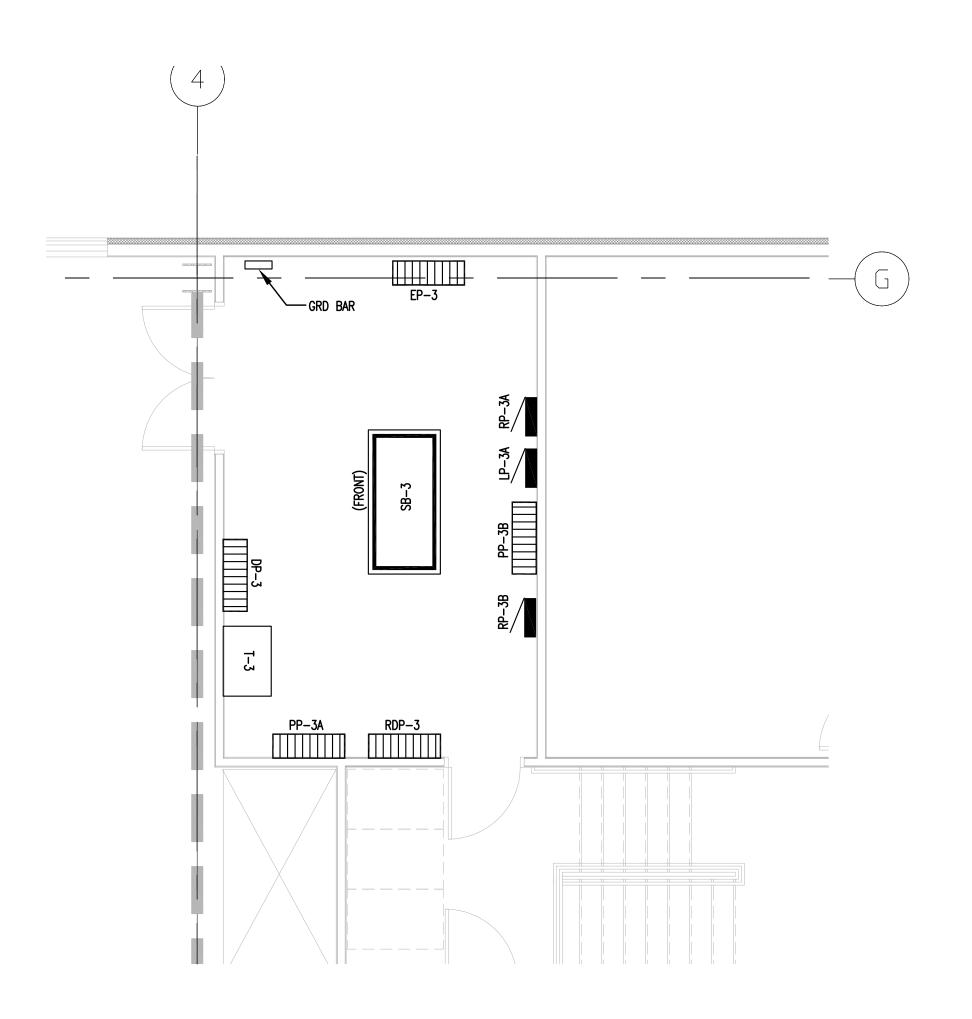
N
ENLARGED MAIN ELECTRICAL ROOM - 1ST FLR

1/4" = 1'-0"



N
2 ENLARGED 2ND FLOOR ELECTRICAL ROOM

1/4" = 1'-0"



3 ENLARGED 3RD FLOOR ELECTRICAL ROOM

BID PACKAGE 1 NOTE:

ELECTRICAL EQUIPMENT SHOWN IN DETAILS 1, 2 AND 3 ARE NOT IN CONTRACT AND SHOWN FOR REFERENCE ONLY.



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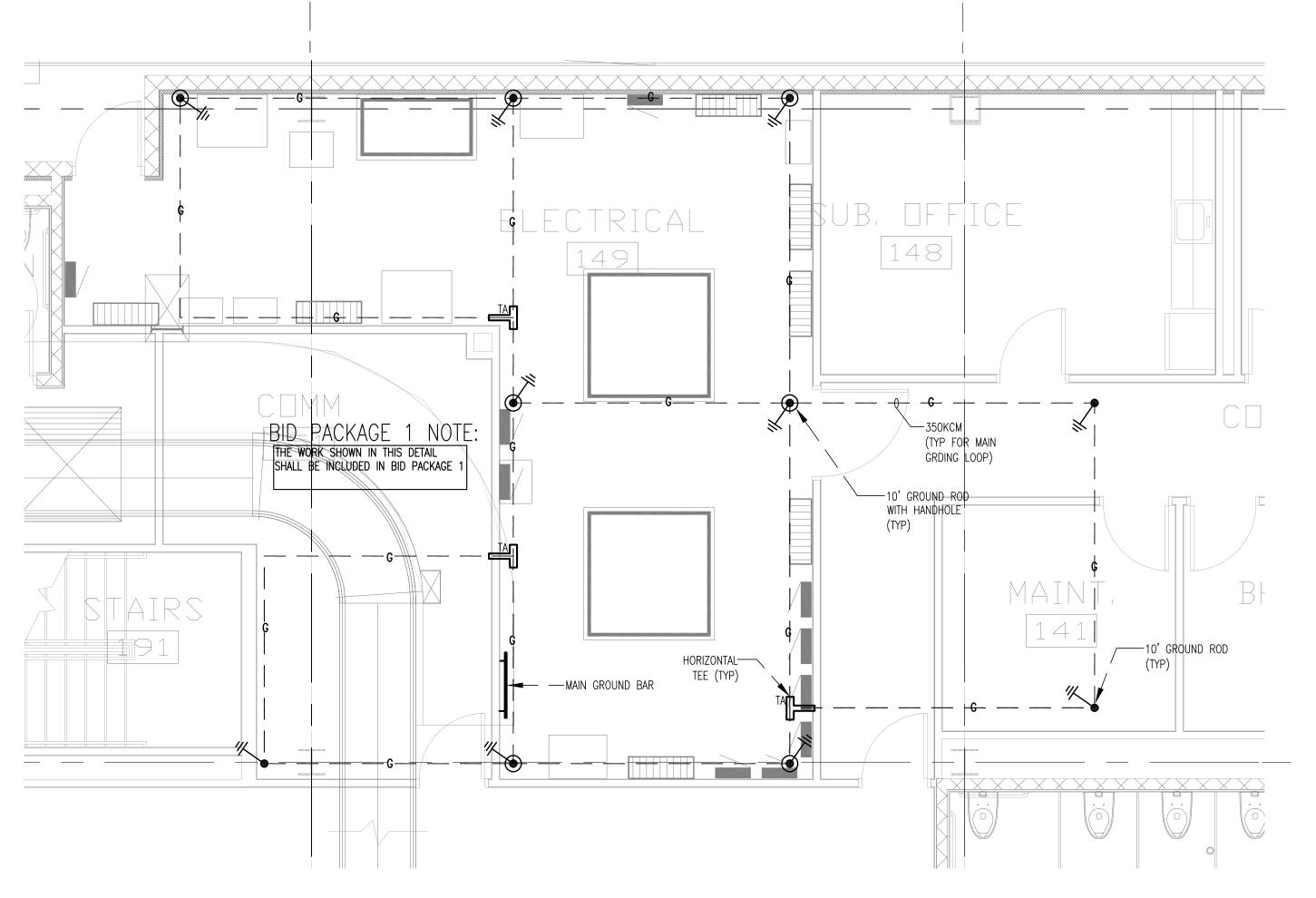
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SHEET TITLE

ENLARGED EQUIPMENT ROOMS

SHEET NUMBER

E200



		GROUNDING TABLE	
#	FROM	то	GND WIRE SIZE (AWG)
1	MAIN GROUND BAR	SWGR "MSG-1A"	SEE RISER DIAGRAM ON DWG E300
2	MAIN GROUND BAR	SWGR "MSG-1B"	SEE RISER DIAGRAM ON DWG E300
3	MAIN GROUND BAR	SWBD "GDP-1"	SEE RISER DIAGRAM ON DWG E300
4	MAIN GROUND BAR	ELEV. MACH RM 175 GRD BAR	#8
5	MAIN GROUND BAR	ELEV. MACH RM 153 GRD BAR	#8
6	MAIN GROUND BAR	ELEV. MACH RM 143 GRD BAR	#8
8	MAIN GROUND BAR	GENERATOR	SEE RISER DIAGRAM ON DWG E300
9	MAIN GROUND BAR	FIRE PUMP	SEE RISER DIAGRAM ON DWG E300
10	MAIN GROUND BAR	MAIN TELEPHONE RM 151 ISOL. GRD BAR	#2
11	MAIN GROUND BAR	MAIN WATER SERVICE PIPE	#1/0
12	MAIN GROUND BAR	TRANSFORMERS IN MAIN ELEC RM 149	SEE RISER DIAGRAM ON DWG E300
13	MAIN GROUND BAR	2ND FLR COMM. RM 217 ISOL. GRD BAR	#2
14	MAIN GROUND BAR	2ND FLR COMP. RM 240 ISOL. GRD BAR	#2
15	MAIN GROUND BAR	2ND FLR TELECOM RM 204 ISOL. GRD BAF	
16	MAIN GROUND BAR	2ND FLR ELEC. RM 230 GRD BAR	#4
17	MAIN GROUND BAR	3RD FLR ELEC. RM 334 GRD BAR	#1/0
18	MAIN GROUND BAR	3RD FLR COMM. RM 313 ISOL. GRD BAR	#2
19	MAIN GROUND BAR	LIGHTNING PROTECTION SYSTEM	#1
20	MAIN GROUND BAR	LIGHTNING PROTECTION SYSTEM	#1
21	3RD FLR ELEC. RM 334 GRD BAR	SWBD "SB-3"	SEE RISER DIAGRAM ON DWG E300
22	3RD FLR ELEC. RM 334 GRD BAR	RANSFORMERS IN 3RD FLR ELEC. RM 334	SEE RISER DIAGRAM ON DWG E300

PROVIDE COUNTERPOISE LOOP FOR LIGHTNING PROTECTION SYSTEM IN BID PACKAGE 1. REFER TO SPECIFICATION SECTION 16670 FOR ADDITIONAL INFORMATION.

BID PACKAGE 1 NOTE:

WORK FOR FLOORS 2 AND 3 ARE

NOT IN CONTRACT.

NOTES:

- 1. REFER TO SPECIFICATION 16060 FOR ADDITIONAL INFORMATION.
- SIZE GROUND BARS (LENGTH) AS REQUIRED PER NUMBER OF CONNECTIONS.



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SHEET TITLE

GROUNDING PLAN

SHEET NUMBER

E201

BID PACKAGE 1 CONFORMANCE

Druning: E\6528.00 Dubth Airport\5.0 C100\(5.b) Electrical\Dugs\6528_E201.dug Plotted on: 7/7/2010 10:10 AM Plotted by: Nuether, Jennifer

<u>ABBREVIATIONS</u>

(THIS LIST OF ABBREVIATIONS DOES NOT APPLY TO ANY LETTERS

USED IN CONJUNCTION WITH SYMBOLS)

A	-	AMPS	MISC	-	MISCELLANEOUS
AC ADJ	_	ALTERNATING CURRENT ADJACENT	MTD MTR	_	MOUNTED MOTOR
AFD	_	AUTOMATIC FIRE DETECTION	Ν	_	NEUTRAL
AFF	_	ABOVE FINISHED FLOOR	NEC	-	NATIONAL ELECTRIC
AFG AIR COND	_	ABOVE FINISHED GRADE AIR CONDITIONING	NEMA	_	CODE NATIONAL ELECTRICAL
AP	_	APPLIANCE PANEL			MANUFACTURERS
ARCH ASYM	_	ARCHITECTURAL ASYMMETRICAL	NL	_	ASSOC. ON NIGHT LIGHTING
AUTO	_	AUTOMATIC	INL		CIRCUIT
AVG	-	AVERAGE	OL D	-	OVERLOAD
BL BLDG	_	BLANK BUILDING	P PB	_	POLES PULL BOX
С	_	CONDUIT	PC	_	PULL CHAIN
CAB CAT	_	CAB CATALOGUE	PF PG	_	POWER FACTOR PAGING
CKT	_	CIRCUIT	PH	_	PHASE
CL	_		PLB	_	I LOMB IIIO
CLG CLOS	_	CEILING CLOSET	PNL PP	_	PANEL POWER PANEL
СМ	_	CIRCULAR MIL	PWR	_	POWER
COL CONC	_	COLUMN CONCRETE	RC REC	- -	REMOTE CONTROL RECEPTACLE
CONST	_	CONSTRUCTION	REQ	_	REQUIRED
CONT	_		RM	-	ROOM
CONV CS	_	CONVENIENCE CABLE SUPPORT	RMS S	_	ROOT MEAN SQUARE SOUND
CU	_	CUBIC	SC	_	SQUIRREL CAGE
DC	_	DIRECT CURRENT	SO SD	-	300111
DIA DN	_	DIAMETER DOWN	SP SPECS	_	SPARE SPECIFICATIONS
DP	_	DISTRIBUTION PANEL	SPKLR	_	SPRINKLER
DTL DWG	_	DETAIL DRAWING	SPKR SQ	_	SPEAKER SQUARE
EA	_	EAST	STD	_	
EC	_		SURF	_	001117102
EL ELEC	_	ELEVATION ELECTRIC	SW SWBD	_	SWITCH SWITCHBOARD
ELEV	_	ELEVATOR	SYM	_	SYMETRICAL
EM ENTR	_	ON EMERGENCY CIRCUIT ENTRANCE	TEL TELCO	-	TELEPHONE TELEPHONE CO.
EP ENTR	_	EXPLOSION PROOF	TV	_	TELEVISION
EQ	_	EQUAL	TYP		TYPICAL
EQPMT EXIST	_		UFD V	_	UNDER FLOOR DUCT VOLTS
F F	_		V VENT	_	
FA		FIRE ALARM	VERT	-	
FDR FIN	_	FEEDER FINISH	VP W	_	VAPORPROOF WATTS
FIXT	_	FIXTURE	WE	_	WEST
FL FLUOR		FLUSH FLUORESCENT	WGD WP	_	WITH GUARD WEATHERPROOF
FSTP		FIRE-STANDPIPE	WR	_	
FT	-		WT	-	W11(11(0 11(000)))
GA GALV	_	GAUGE GALVANIZED	XFMR YD	_	TRANSFORMER YARD
GRD		GROUND			,, <u>-</u>
H HC	_	HERMETIC HUNG CEILING			
HGT	_	HE I GHT			
HOR	-		• • • • • • • • • • • • • • • • • • • •	-	WIRE GAUGE NUMBER
HP HT	_	HORSEPOWER HIGH TENSION	TED TO OTHER		
HTG	_	HEATING	WORDS)		5
HVAC	_	HEATING VENTILATING AND AIR CONDITIONING	Ø F@	_	PHASE FUSED AT
IN	_	INCHES	С	_	CENTER LINE
INCAN	_	11107111102002111	C/B	_	CIRCUIT BREAKER
INT JB	_	INTERCOM JUNCTION BOX	CONV/O	_	CONVENIENCE OUTLET
KVA	_	KILOVOLT AMPERES	C/T	_	CURRENT
KW KW	_	1112011/11	n /T		TRANSFORMER
KWH LP	_	KILOWATT HOURS LIGHTING PANEL	P/T	_	POTENTIAL TRANSFORMER
LS	_	LOUDSPEAKER	0/C	_	OVERCURRENT
LT LTG	_	LOW TENSION LIGHTING	C/C N/O	_ _	CENTER TO CENTER NORMALLY OPEN
M M	_	MAIN	N/C	_	NORMALLY CLOSED
MA	-	MILLIAMPS	1/C,2/C	-	ONE CONDUCTOR
MACH MCC	_	MACHINE MOTOR CONTROL CENTER	3/C		TWO CONDUCTORS, ETC.
MCM	_	THOUSAND CIRCULAR MILS			_, .
MECH MIC	_	MECHANICAL MICROPHONE			
WIIC	_	INI I OVOLUOINE			

TABLE 1

		3 PHASE FI	EEDER VOLTAGE DROP CALCULAT	LIONS	
		(TO LIMIT	VOLTAGE DROP TO 3% PER NEC	215.2)	
FEEDER	FEEDER	MAXIMUM	VOLTAGE DROP FACTOR	MAXIMUM	1
SIZE	OCP, A	LOAD, A	@ 0.8 P.F.	FEEDER	LENGTH, F
		(VOLTS PER AMPERE PER 100FT) 208V	480V
#12	20	16	0.27	144	333
#10	30	24	0.17	153	353
#8	50	40	0.11	142	327
#6	60	48	0.073	178	411
#4	80	64	0.048	203	469
#2	100	80	0.032	244	563
#1	150	120	0.026	200	462
#1/0	175	140	0.023	194	447
#2/0	200	160	0.019	205	474
#3/0	225	180	0.016	217	500
#4/0	250	200	0.014	223	514
250KCM	300	240	0.012	217	500
300KCM	300	240	0.011	236	545
350KCM	350	280	0.01	223	514
400KCM	350	280	0.0095	235	541
500KCM	400	320	0.0085	229	529
600KCM	400	355	0.008	220	507

TABLE 2

ITADEL	- –				
		1 PHASE FE	EEDER VOLTAGE DROP CALCULAT	IONS	
		(TO LIMIT	VOLTAGE DROP TO 3% PER NEC	210.19))
FEEDER	FEEDER	MAXIMUM	VOLTAGE DROP FACTOR	MAXIMUN	1
SIZE	OCP, A	LOAD, A	@ 0.8 P.F.	FEEDER	LENGTH,
		(VOLTS PER AMPERE PER 100FT) 120V	277V
#12	20	16	0.31	73	168
#10	20	16	0.2	113	260
#8	20	16	0.13	173	400
		· ·	•	-	

TABLE 3

48	BO VOLT	MOTOR	CONTRO	LLER / FEEDER / DE	VICE SCHEDULE
	NEMA	OVERCURRENT	LOCAL MOTOR	FEEDER FOR ACROSS THE LINE	FEEDER FOR REDUCED VOLTAG
	CONTROLLER	DEVICE	DISCONNECT	START, VARIABLE FREQUENCY	START - WYE-DELTA OR PAR
MOTOR HP	SIZE	(AMPS)	(AMPS)	CONTROLLER	WINDING
1/2	00	15	30	3 # 12 - 3/4" C	
3/4	00	15	30	3 # 12 - 3/4" C	
1	00	15	30	3 # 12 - 3/4" C	
1-1/2	00	15	30	3 # 12 - 3/4" C	
2	00	15	30	3 # 12 - 3/4" C	
3	0	15	30	3 # 12 - 3/4" C	
5	0	15	30	3 # 12 - 3/4" C	
7-1/2	1	20	30	3 # 12 - 3/4" C	
10	1	25	30	3 # 12 - 3/4" C	6 # 12 - 3/4" C
15	2	35	30	3 # 10 - 3/4" C	6 # 12 - 3/4" C
20	2	45	60	3 # 8 - 3/4" C	6 # 12 - 3/4" C
25	2	60	60	3 # 6 - 1" C	6 # 8 - 1" C
30	3	70	60	3 # 6 - 1" C	6 # 8 - 1" C
40	3	90	60	3 # 4 - 1" C	6 # 6 - 1-1/4" C
50	3	110	100	3 # 2 - 1-1/4" C	6 # 4 - 1-1/4" C
60	4	125	100	3 # 1 - 1-1/4" C	6 # 4 - 1-1/4" C
75	4	150	200	3 # 1 - 1-1/4" C	6 # 2 - 1-1/2" C
100	4	200	200	3 # 2/0 - 1-1/2" C	6 # 1 - 2" C
125	5	250	200	3 # 3/0 - 2" C	6 # 1 - 2" C
150	5	300	400	3 # 4/0 - 2" C	6 # 1/0 - 2" C
200	5	400	400	3 - 350 MCM - 2-1/2" C	6 # 3/0 - 2-1/2" C
250	6	500	400	3 - 500 MCM - 3" C	6 - 250 MCM - 3" C
300	6	600	600	6 -250 MCM - 3" C	6 - 350 MCM - 3-1/2" C
400	6	800	600	6 - 300 MCM - 3-1/2" C	12 # 3/0 - (2) 2-1/2" C
500	7	1000	800	6 - 500 MCM - (2) 3" C	12 - 250 MCM - (2) 3" C

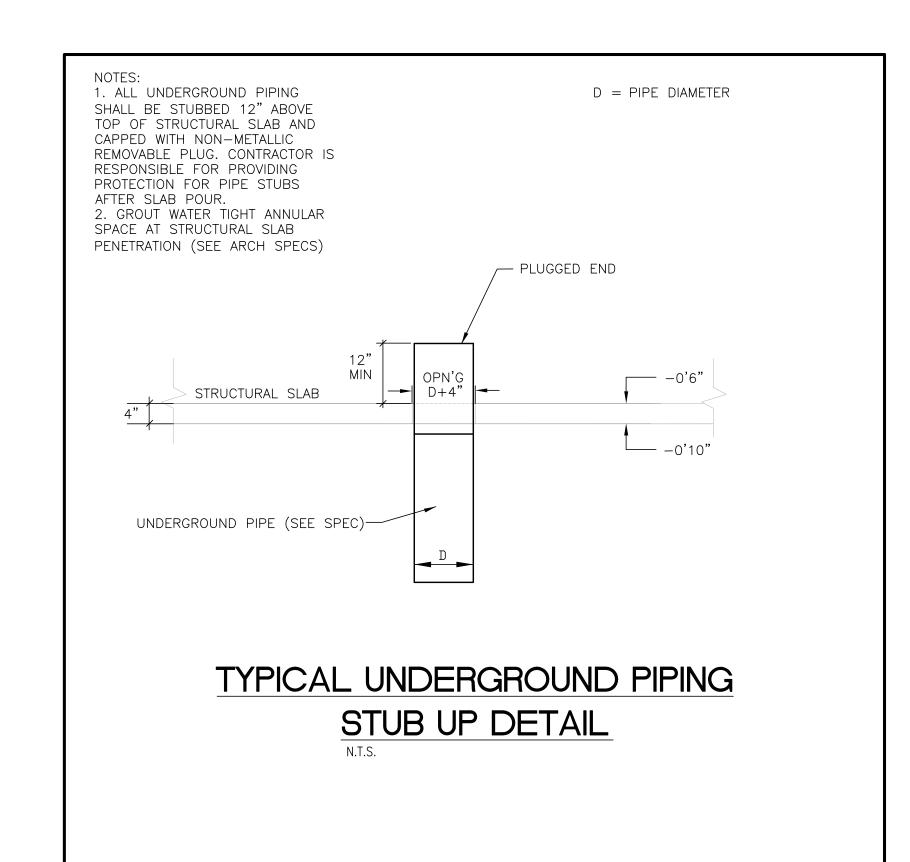
NOTES: 1 - FOR FEEDERS IN EXCESS OF 300 FEET IN LENGTH PROVIDE NEXT LARGER SIZE CONDUCTORS.

2 - FOR REDUCED VOLTAGE STARTERS, DISCONNECT SWITCHES INTERPOSED INTO FEEDER BETWEEN

3 - PROVIDE A GROUND CONDUCTOR (SIZED PER CODE) FROM EACH VFD TO NEAREST GROUNDING

INCREASE CONDUIT SIZE AS REQUIRED.

STARTER AND MOTOR SHALL BE 6 POLE TYPE.





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DULUTH AIRPORT AUTHORITY

DULUTH INTERNATIONAL AIRPORT DULUTH, MN

NEW PASSENGER TERMINAL

<u>CONSULTANTS</u>

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Landscaping Consultants:

APPOLD DESIGN 2432 East First Street, Duluth MN 55812 TEL: (218) 591-5079

REVISIONS NO. DESCRIPTION DATE 1 ADDENDUM 1 DATE ISSUED: 07-12-10

DRAWN BY: JK DESIGNED BY: JK

REVIEWED BY: XXX

AEP PROJECT NUMBER

213-1882-091

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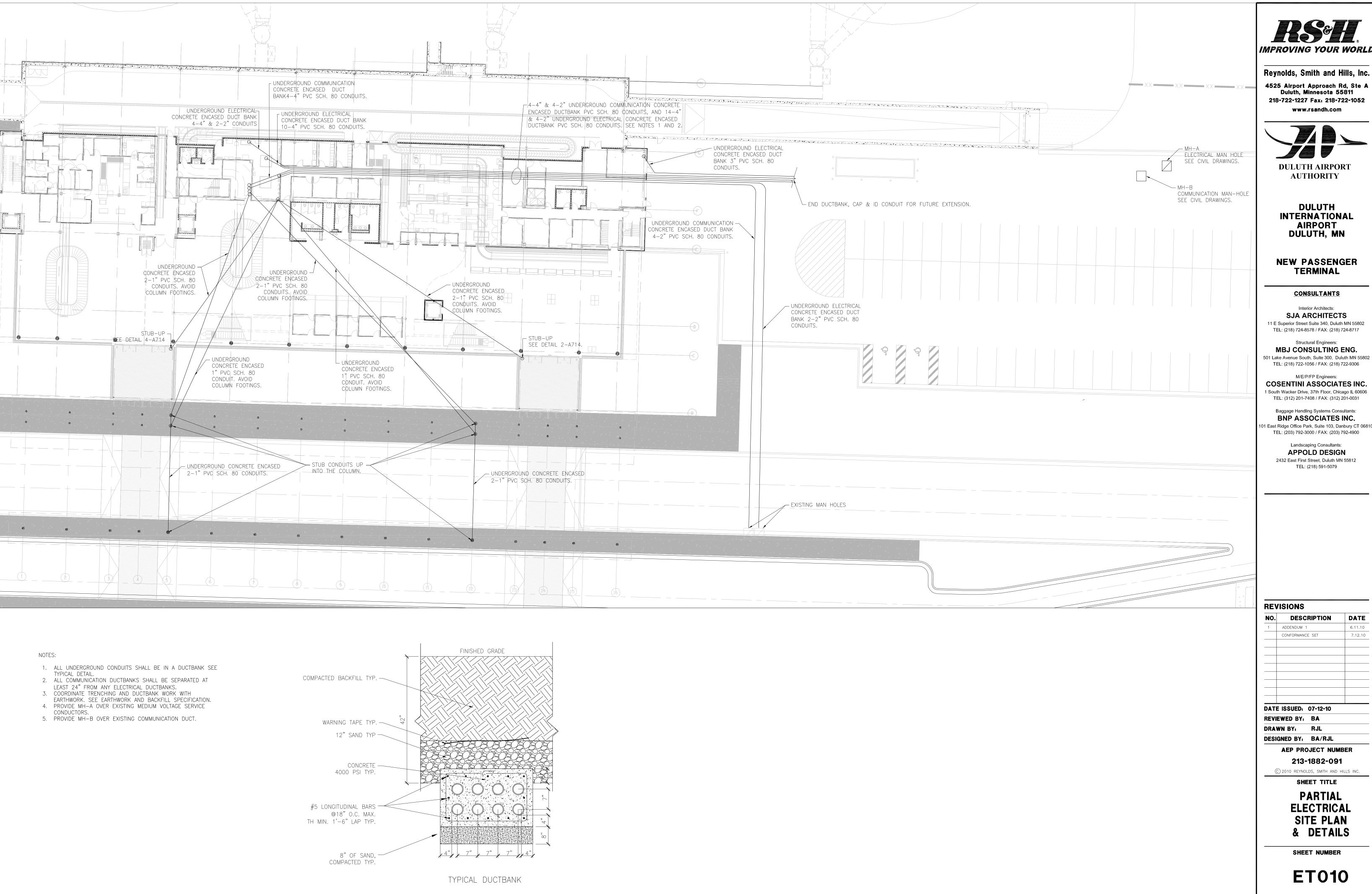
> ELECTRICAL **ABBREVIATIONS** AND TABLES

SHEET NUMBER

E400

BID PACKAGE 1 CONFORMANCE

Druning: E\5528.00 Duluth Airport\5.0 CHOD\(5.b) Electrical\Dugs\5528_E100.dug Plotted on: 7/14/2010 1:26 PM Plotted by: Norther, Jennifer



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NO.	DESCRIPTION	DATE
1	ADDENDUM 1	6.11.10
	CONFORMANCE SET	7.12.10

DATE ISSUED: 07-12-10 REVIEWED BY: BA

DESIGNED BY: BA/RJL

AEP PROJECT NUMBER

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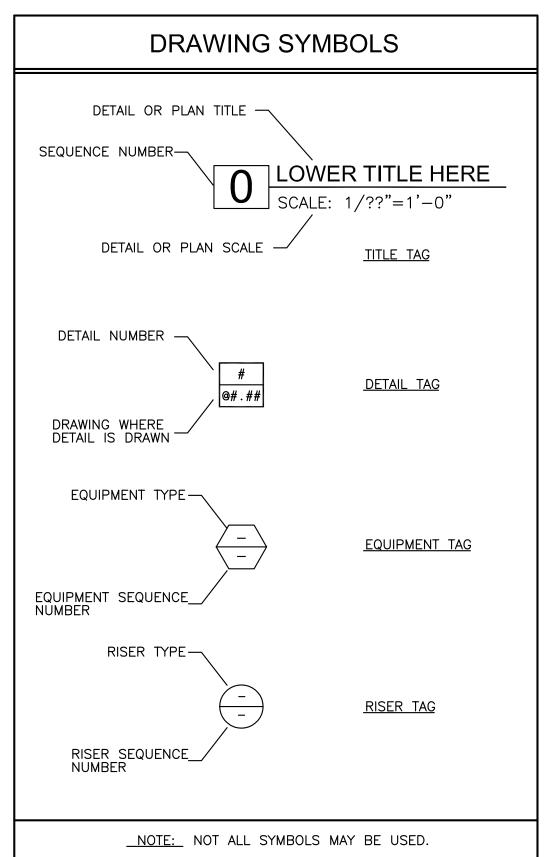
SHEET TITLE

PARTIAL

ELECTRICAL SITE PLAN & DETAILS

SHEET NUMBER

ET010



SYMBOLS DESCRIPTION AREA DRAIN PIPING (UNDERGROU SUB—SOIL DRAINAGE	
<u>'</u>	
STORM (SUSPENDED) STORM (UNDERGROUND) SANITARY (SUSPENDED) SANITARY (UNDERGROUND) WASTE (SUSPENDED) VENT PIPING (SUSPENDED)	ND)
VENT PIPING (UNDERGROUND) COLD WATER COLD WATER (UNDERGROUND) HOT WATER HOT WATER RETURN PIPING TO BE REMOVED ROLL DOWN PIPING ON 45° DIRECTION OF FLOW	
P-TRAP WITH VENT PIPE CONNECT PIPE LOOKING DOWN PIPE LOOKING UP TEE CONNECTION LOOKING DOWN TEE CONNECTION WITH BRANCH LE CAPPED PIPE PIPE BREAK BALL VALVE GATE VALVE (SHUT-OFF) CHECK VALVE BALANCING VALVE BALANCING VALVE TOOR CLEANOUT AREA DRAIN (AD-X) FLOOR DRAIN & TYPE NO. (FD-X)	LOOKING UP LOOKING DOWN
CLEANOUT (SUSPENDED) WCO WALL CLEANOUT UR-X WATER CLOSET & TYPE NO. (WC-X URINAL & TYPE NO. (UR-X) ELECTRIC WATER COOLER & TYPE JANITOR'S MOP BASIN & TYPE NO. LAV-X LAVATORY & TYPE NO. (LAV-X) HB-X HOSE BIBB & TYPE NO. (HB-X) HOT WATER HEATER & TYPE NO. DF-X DRINKING FOUNTAIN & TYPE NO. SS-X POINT OF CONNECTION NEW TO E	-X) E NO. (EWC-X) O. (JMB-X) (HWH-X) (DF-X)

NOTE: NOT ALL SYMBOLS MAY BE USED.

ADD AFF ADD AFF ABOVE FINISHED FLOOR ARF ABOVE SUSPENDED CELLING BISTON BOOLD CO CORNECT CV CV CHECK VALVE CW CUC CHECK VALVE CW COLD WATER DOWN DS DOWNSPOUT DT DRAMING E EXISTING ES DWC ELECTRIC WATER COOLER FCO FLOOR CELANOUT CON CONICCT CV CV CHECK VALVE CW COLD WATER DET DET DET DAWN DS DOWNSPOUT DT DRAMING E EXISTING ES DWREACHCY SHOWER EWC ELECTRIC WATER COOLER FCO FLOOR CLEANOUT FD GRAME GB GREASE BASIN GD GRAME DRAIN GN GENERAL NOTE GV GARAGE DRAIN GN GENERAL NOTE GV GARAGE WASTE HB HOT WATER RETURN IE INVERT ELEVATION IN IN IND NO NORMALLY CLOSED NEWH N.C. NORMALLY CLOSED PG PRESSURE GAUGE RD ROOP DRAIN GREE FET SEB SEMAGE LUECTOR SP SH SETTLING BASIN SE SETTLING BASIN SE SETTLING BASIN SE SEMAGE ELECTOR BASIN SH SH SHOWER SEV SEWAGE ELECTOR BASIN SH SH SHOWER SEV SUMP PUMPE SPB SUMP PUMP SPB SUMP SUMP SUMP SUMP SUMP SUMP SUMP SUMP	PLUM	BING ABBREVIATIONS
AFF ABOVE FINISHED FLOOR ARF ARF ABOVE RAISED FLOOR ASC B.F.P. BO.P. BOTTOM OF PIPE B.O.S. BOTTOM OF PIPE B.O.S. BOTTOM OF STEEL CI CAST IRON CONLECT CV CUECK VALVE CW COLD WATER DETAL DN DOWN DS DOWNSPOUT DT DRAINTLE DWG DRAWING E EXISTING ES EMERGENCY SHOWER EW EYE WASH EWC ELECTRIC WATER COOLER FCO FLOOR CLEANOUT FD FLOOR CLEANOUT GRANG GRASE BASIN GD GRASE BASIN GD GRASE BASIN GN GRASE WASTE HB HOSE BIBB HW HOT WATER RETURN IE INVERT ELEVATION IM ICE MAKER LAV LAVATORY MAN WAN MANUAL AIR VENT MR MOP RECEPTOR MY MAN VENT N NEW N.C. NORMALLY CLOSED NFWH N.O. NORMALLY CLOSED NFWH N.O. NORMALLY OPEN OD O'VERTLOW DEAIN OHD OPEN HUB DEAIN PD PUMPED DISCHARGE PG PRESSURE GAUGE RD ROOF DEAIN ROB ROD OUT BASIN ROB ROD OUT BASIN ROB ROD OUT BASIN SE SETUING BASIN SE SETUING BASIN SE SEVAGE EJECTOR BASIN SH SHOWER SEV SEWAGE EJECTOR BASIN SH SH TOP TYPICAL UNDERGROUND U.N.O. UNLESS NOTED OTHERWISE UR UNDERGROUND U.N.O. UNLESS NOTED OTHERWISE UR VERT THUR ROOF W WASTE VALUM BREAKER VIF VERT THUR ROOF W WASTE VALUM BREAKER VIF VERT THUR ROOF W WASTE UR UNDERGROUND U.N.O. UNLESS NOTED OTHERWISE UR UNDERGROUND U.N.O. UNLESS NOTED OTHERWISE UR VIRIAL V VENT VALUM BREAKER VIF VERT THUR ROOF W WASTE UR VALUM BREAKER VIF VERT THUR ROOF W WASTE UR VALUM BREAKER VIF VERT THUR ROOF W WASTE UR VALUM BREAKER VIF VERT THUR ROOF W WASTE UR VALUM BREAKER VIF VERT THUR ROOF W WASTE UR VALUM BREAKER VIF VERT THUR ROOF W WASTE UR VALUM BREAKER VIF VERT THUR ROOF W WASTE UR VALUM BREAKER VIF VERT THUR ROOF W WASTE UR VALUM BREAKER VIF VERT THUR ROOF W WASTE UR VALUM BREAKER VIF VERT THUR ROOF W WASTE UR VALUM BREAKER VIF VERT THUR ROOF W WASTE UR VALUM BREAKER VIF VALUM BR	ABBREVIATIONS	DESCRIPTION
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OHD OPEN HUB DRAIN PD PUMPED DISCHARGE PG PRESSURE GAUGE RD ROOF DRAIN ROB ROD OUT BASIN RPZ REDUCE PRESSURE ZONE (BACKFLOW PREVENTOR) SAN OF S SANITARY SB SETTLING BASIN SE SEWAGE EJECTOR SF SQUARE FEET SEB SEWAGE EJECTOR BASIN SH SHOWER SEV SEWAGE EJECTOR VENT SN SHEET NOTE SP SUMP PUMP SPB SUMP PUMP BASIN SPV SUMP PUMP VENT ST STORM SSD SUB-SOIL DRAINAGE STK STACK SK SINK T & P TEMP. & PRESSURE RELIEF VALVE TD TRENCH DRAIN T.O.B. TRIPLE OIL BASIN TP TYPICAL UG UNDERGROUND U.N.O. UNLESS NOTED OTHERWISE UR URINAL V VENT VB VACUUM BREAKER VIF VERIFY IN FIELD VTR VENT THRU ROOF W WASTE WC WATER CLOSET WITH LAVATORY		
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VB VACUUM BREAKER VIF VERIFY IN FIELD VTR VENT THRU ROOF W WASTE WC WATER CLOSET W/L WATER CLOSET WITH LAVATORY	UR	URINAL
VIF VERIFY IN FIELD VTR VENT THRU ROOF W WASTE WC WATER CLOSET W/L WATER CLOSET WITH LAVATORY	v	VENT
VTR VENT THRU ROOF W WASTE WC WATER CLOSET W/L WATER CLOSET WITH LAVATORY	VB	VACUUM BREAKER
W WASTE WC WATER CLOSET W/L WATER CLOSET WITH LAVATORY		
WC WATER CLOSET W/L WATER CLOSET WITH LAVATORY		
W/L WATER CLOSET WITH LAVATORY		
WCO WALL CLEANOUT		WATER CLOSET WITH LAVATORY
	wco	WALL CLEANOUT

NOTE: NOT ALL SYMBOLS MAY BE USED.

		5528 PLUMBING DRAWING LIST								
						[DATE			
Sheet No.	Filename (proj.#5528)	DRAWING TITLE	11/25/09 ISSUED FOR DD	01/29/10 60% REVIEW	03/26/10 90% REVIEW	04/09/10 90% CD	05/07/10 BID PACK 1 ISSUED FOR BID	06/01/10 FOUNDATION PERMIT	06/14/10 ADDENDUM #2	ш
P001	5528P001	PLUMBING SYMBOLS, ABBREVIATIONS AND DRAWING INDEX	•	0	0	•	•	•		0
P100	5528P100	ENLARGED UNDERGROUND PLUMBING PLAN AREA A		0	0	•	•	•		0
P101	5528P101	ENLARGED UNDERGROUND PLUMBING PLAN AREA B		0	0	0	0	0		
P102	5528P102	ENLARGED UNDERGROUND CANOPY PLUMBING PLAN AREA A	0	0	0	•	0	•		0
P103	5528P103	ENLARGED UNDERGROUND CANOPY PLUMBING PLAN AREA B	•	0	0	•	0	•		0
P110	5528P110	ENLARGED FIRST FLOOR PLUMBING PLAN AREA A	0	0	0	•			0	
P111	5528P111	ENLARGED FIRST FLOOR PLUMBING PLAN AREA B	•	0	0	•			0	0
P112	5528P112	ENLARGED SECOND FLOOR PLUMBING PLAN AREA A	•	0	0	•			0	0
P113	5528P113	ENLARGED SECOND FLOOR PLUMBING PLAN AREA B	0	0	0	•			0	
P114	5528P114	ENLARGED THIRD FLOOR PLUMBING PLAN AREA A		0	0	0			0	0
P115	5528P115	ENLARGED THIRD FLOOR PLUMBING PLAN AREA B	•	0	0	•			0	
P116	5528P116	ENLARGED ROOF LEVEL PLUMBING PLAN AREA A	0	0	0	•			0	0
P117	5528P117	ENLARGED ROOF LEVEL PLUMBING PLAN AREA B	0	0	0	0			0	0
P118	5528P118	ENLARGED FIRST FLOOR PLUMBING PLAN AREA A CANOPY	0	0	0	0				0
P119	5528P119	ENLARGED FIRST FLOOR PLUMBING PLAN AREA B CANOPY		0	0	0				0
P120	5528P120	ENLARGED SECOND FLOOR PLUMBING PLAN AREA A CANOPY ROOF			0	0				0
P121	5528P121	ENLARGED SECOND FLOOR PLUMBING PLAN AREA B CANOPY ROOF			0	0				0
P122	5528P122	TUG RAMP ROOF PLUMBING PLAN			0	•				
P301	5528P301	WATER SCHEMATIC, GAS SCHEMATIC AND STORM RISER DIAGRAM	•	0	•	•			0	•
P302	No. Filianame									
P303	5528P303	WASTE AND VENT RISER DIAGRAM			0	•		0		0
P401	5528P401	PLUMBING DETAILS	•	0	0	•	•	•		•
P402	5528P402	PLUMBING DETAILS	0	0	0	•				
P403	5528P403	PLUMBING DETAILS			•	•				
P501	5528P501	PLUMBING SCHEDULES		0		0	•			0



Reynolds, Smith and Hills, Inc.

4525 Airport Approach Rd, Ste A Duluth, Minnesota 55811 218-722-1227 Fax: 218-722-1052

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DULUTH AIRPORT AUTHORITY

DULUTH INTERNATIONAL AIRPORT DULUTH, MN

NEW PASSENGER TERMINAL

CONSULTANTS

Interior Architects:

SJA ARCHITECTS

11 E Superior Street Se 340, Duluth MN 55802
TEL: (218) 724-8578 / FAX: (218) 724-8717

Structural Engineers:

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TEL: (312) 201-7408 / FAX: (312) 201-0031

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BNP ASSOCIATES INC.

D1 East Ridge Office Park, Suite 103, Danbury CT 06810

TEL: (203) 792-3000 / FAX: (203) 792-4900

Landscaping Consultants:

APPOLD DESIGN

APPOLD DESIGN
2432 East First Street, Duluth MN 55812
TEL: (218) 591-5079

DRAWN BY: HV
DESIGNED BY: SA

REVIEWED BY: RDJ

AEP PROJECT NUMBER

213-1882-091
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SHEET TITLE

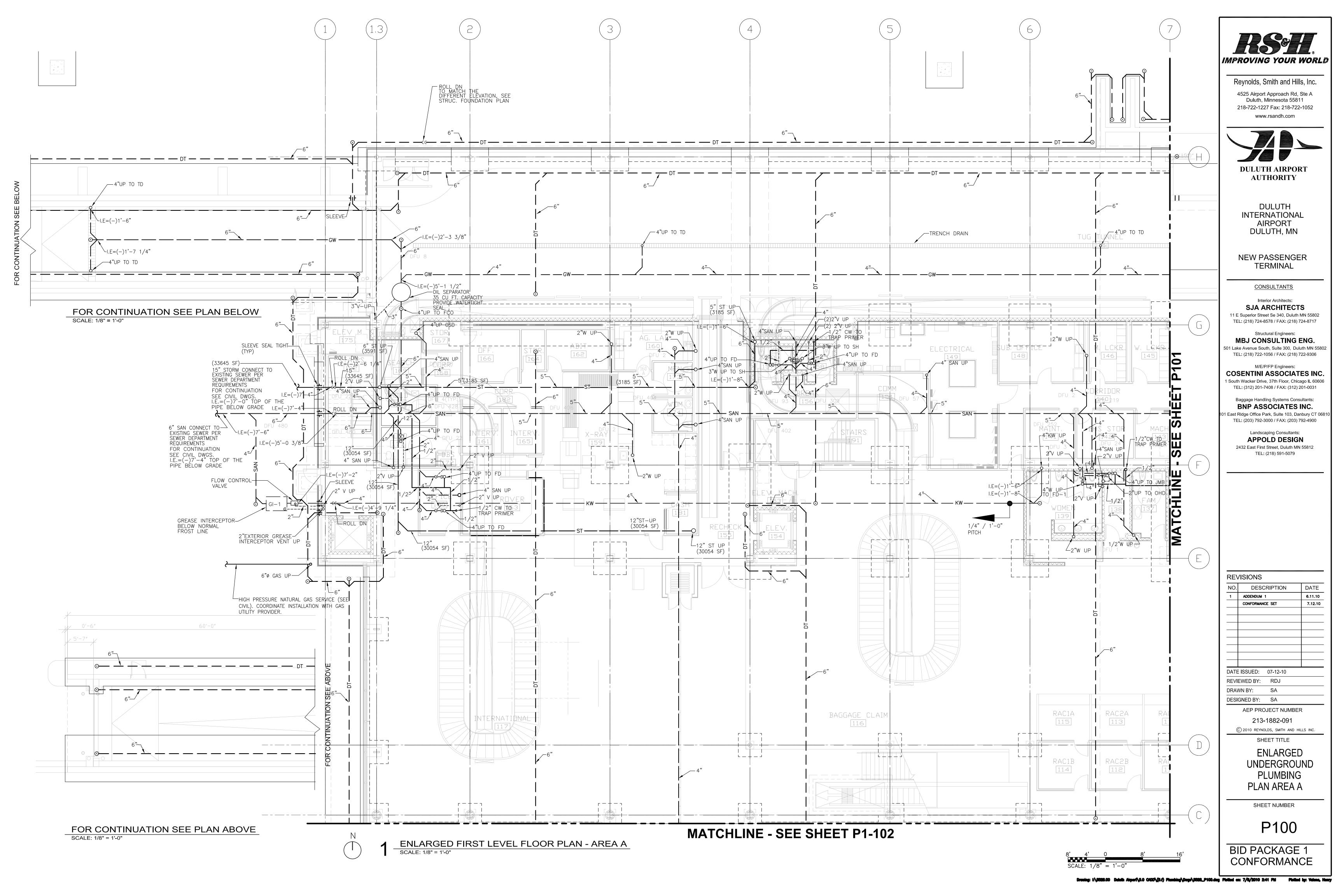
PLUMBING SYMBOL LIST, ABBREVIATIONS AND DRAWING LIST

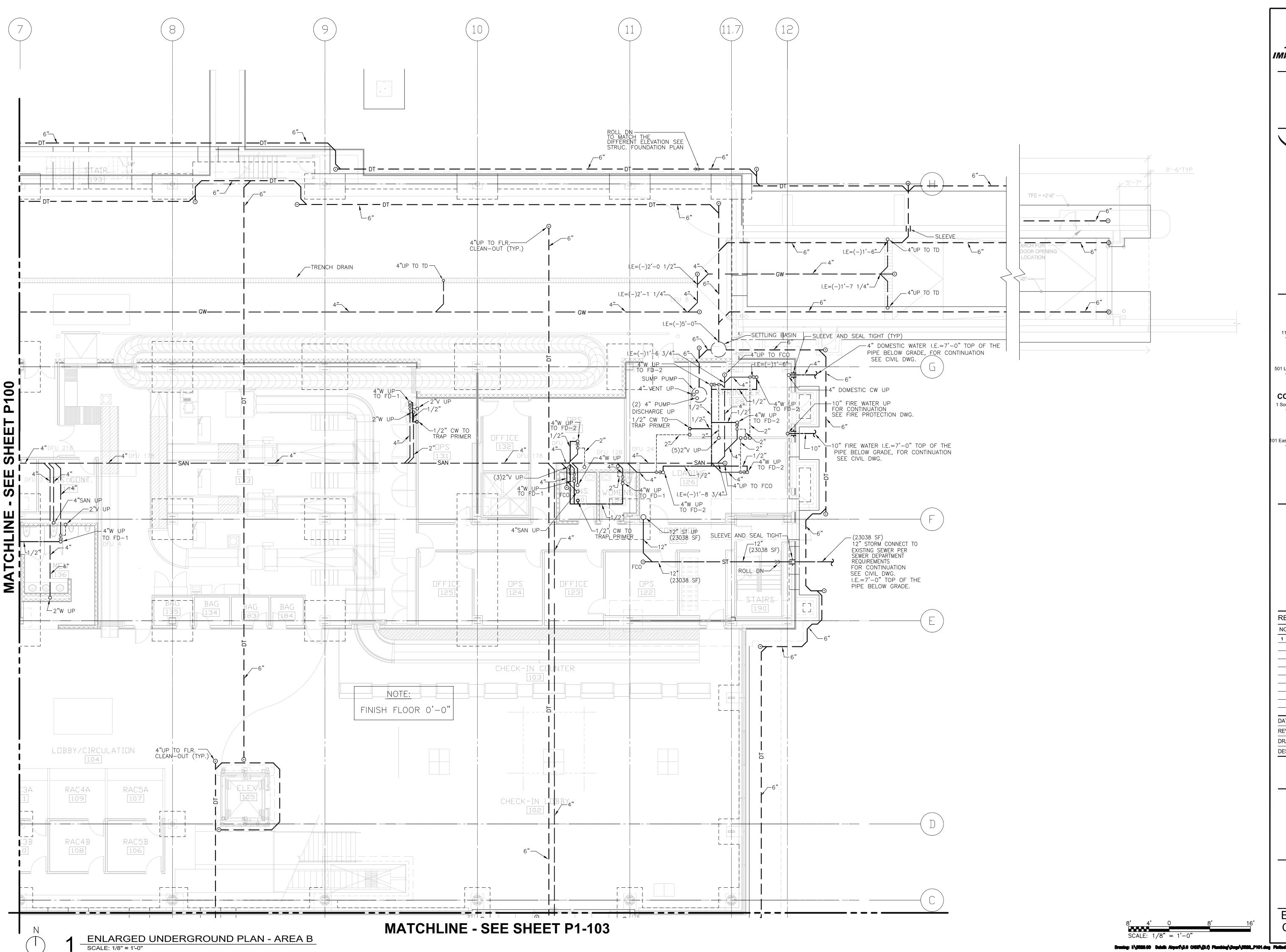
SHEET NUMBER

P001

BID PACKAGE 1 CONFORMANCE

Drowing: E\5838.00 Duluth Airport\5.0 CHOO\(5.0) Plumbing\Dugs\5538_P001.dug Plotted on: 7/8/2010 2:32 PM Plotted by: Valenc, Henry





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Landscaping Consultants:

APPOLD DESIGN

432 Fact First Street, Duluth MN 55812

2432 East First Street, Duluth MN 55812 TEL: (218) 591-5079

REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM 1	6.11.10
	CONFORMANCE SET	7.12.10

DATE ISSUED: 07-12-10
REVIEWED BY: RDJ

DRAWN BY: SA
DESIGNED BY: SA

AEP PROJECT NUMBER

213-1882-091

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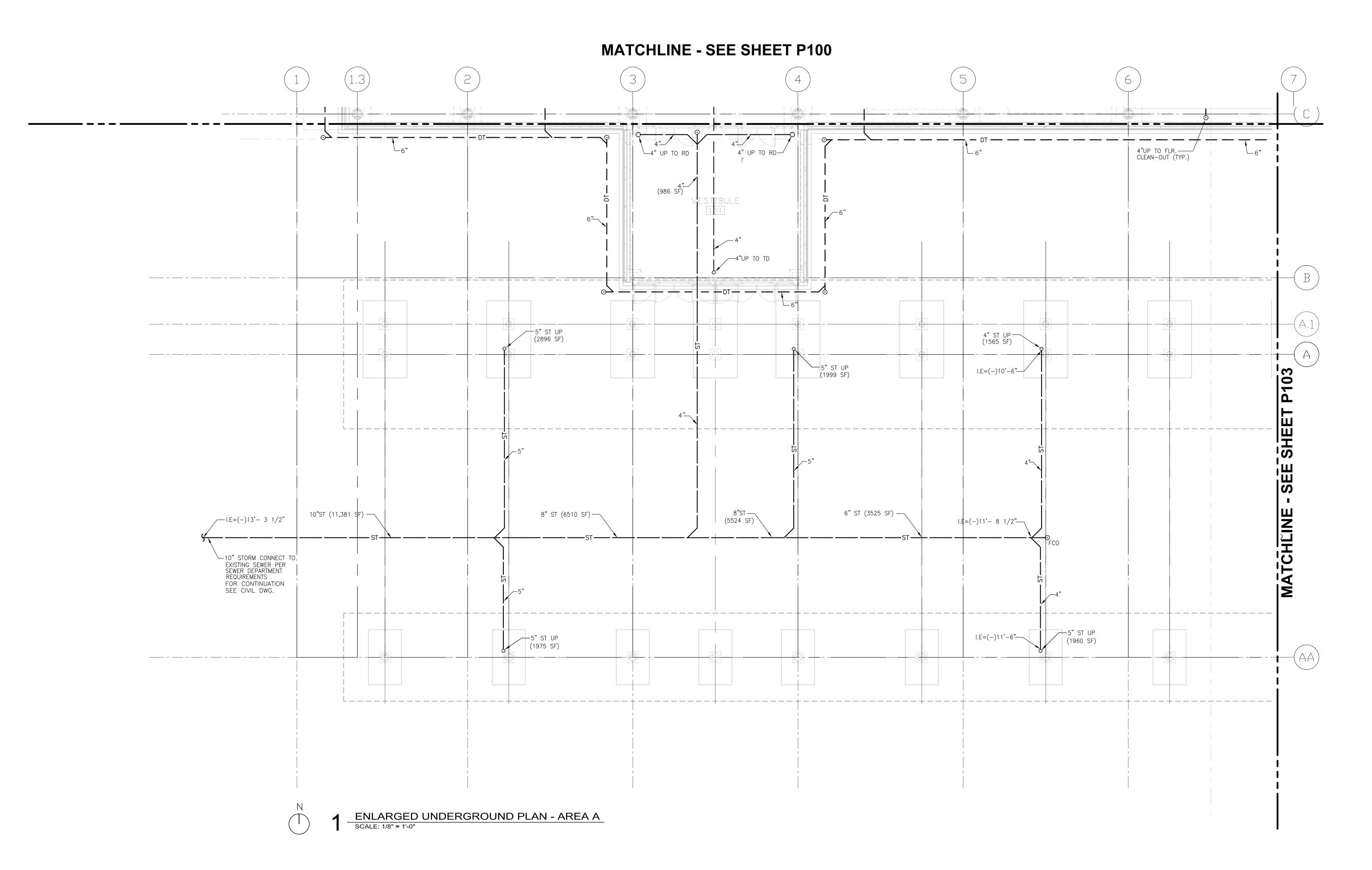
SHEET TITLE

ENLARGED UNDERGROUND

PLUMBING PLAN AREA B

SHEET NUMBER

P101





4525 Airport Approach Rd, Ste A Duluth, Minnesota 55811 218-722-1227 Fax: 218-722-1052 www.rsandh.com



DULUTH INTERNATIONAL AIRPORT DULUTH, MN

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DESIGNED BY: SA

AEP PROJECT NUMBER

213-1882-091

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SHEET TITLE

ENLARGED

UNDERGROUND PLUMBING PLAN AREA A

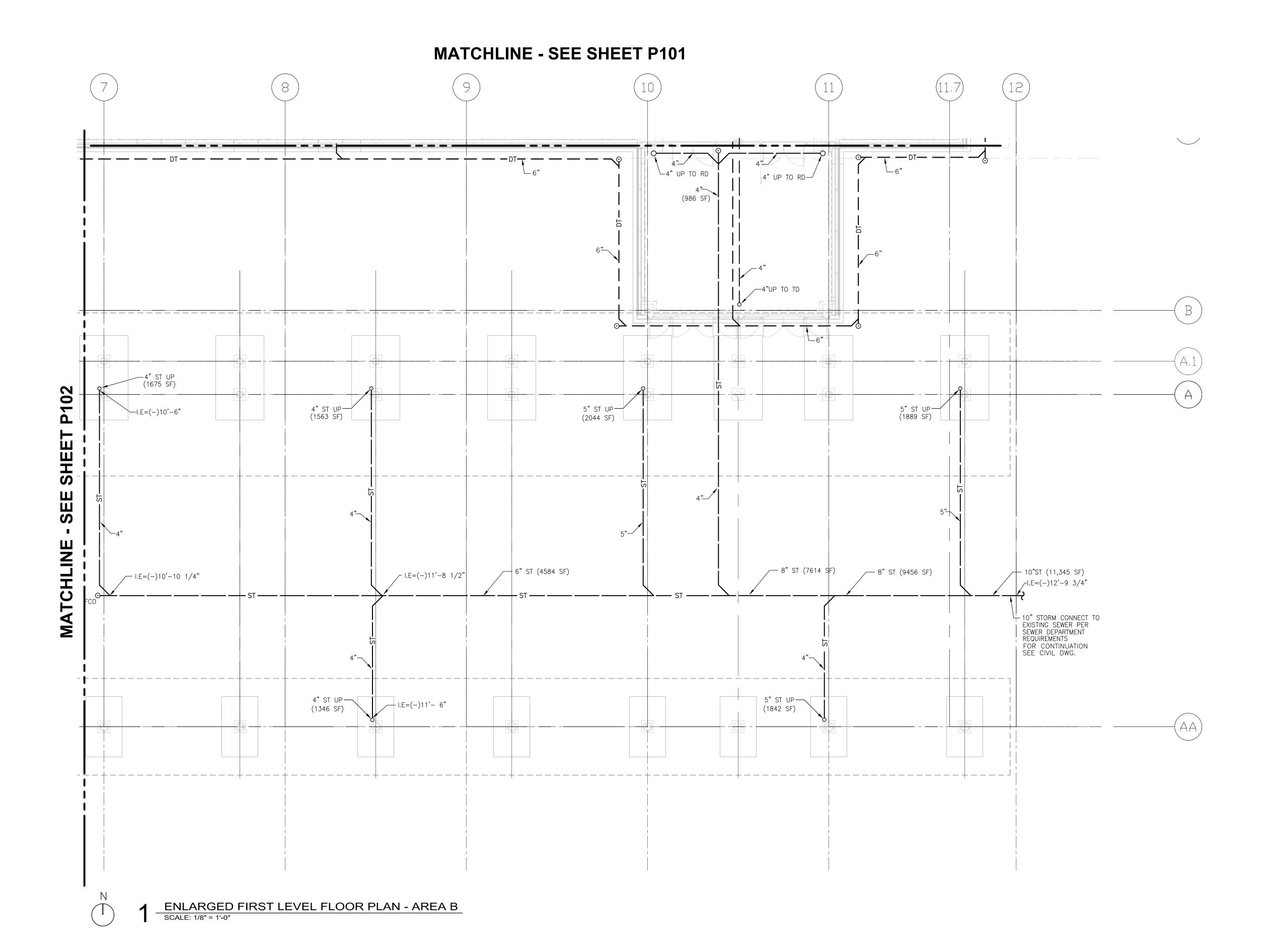
SHEET NUMBER

P102

BID PACKAGE 1 CONFORMANCE

8' 4' 0 8'SCALF: 1/8" = 1'-0"

Drawing: E\SSSE.00 Duluth Airport\5.0 CHOO\(5.0) Plumbing\Duge\SSSE_P102.dug Plotted on: 7/6/2010 2:44 PM Plotted by: Valenc, Henry





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BNP ASSOCIATES INC.
11 East Ridge Office Park, Suite 103, Danbury CT 06810

TEL: (203) 792-3000 / FAX: (203) 792-4900

Landscaping Consultants: **APPOLD DESIGN**

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2432 East First Street, Duluth MN 55812
TEL: (218) 591-5079

NO. DESCRIPTION DATE

1 ADDENDUM 1 6.11.10

CONFORMANCE SET 7.12.10

DATE ISSUED: 07-12-10
REVIEWED BY: RDJ

DRAWN BY: SA

DESIGNED BY: SA

AEP PROJECT NUMBER

213-1882-091

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SHEET TITLE

ENLARGED UNDERGROUND PLUMBING

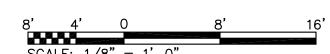
PLAN AREA B

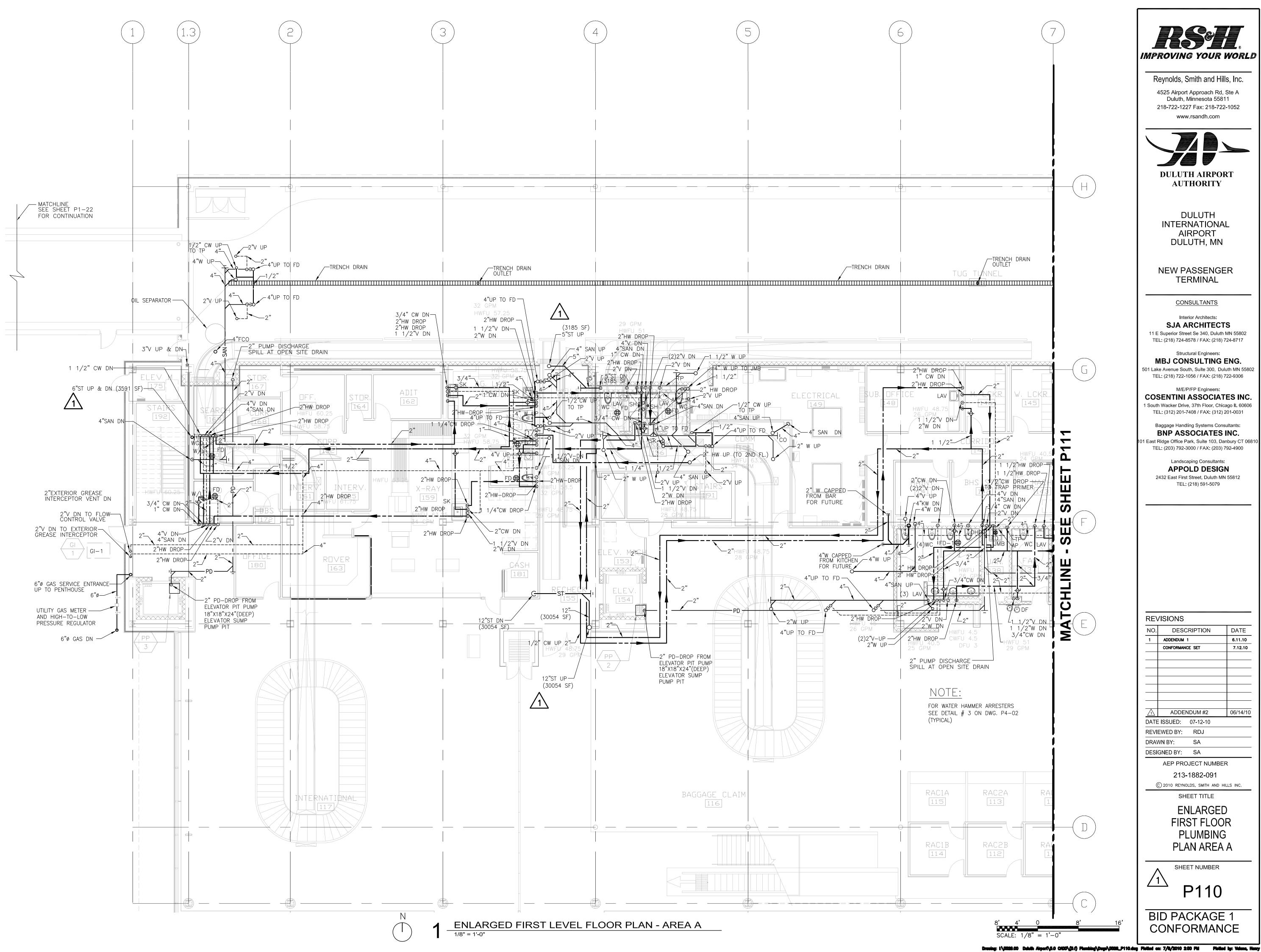
P103

SHEET NUMBER

BID PACKAGE 1 CONFORMANCE

Drawing: E\5528.00 Duluth Airport\5.0 CHOO\(5.4) Plumbing\Duga\5528_P105.dug Plotted on: 7/8/2010 2:46 PM Plotted by: Valenc, Henry







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DULUTH INTERNATIONAL AIRPORT DULUTH, MN

NEW PASSENGER TERMINAL

CONSULTANTS

Interior Architects: SJA ARCHITECTS

11 E Superior Street Se 340, Duluth MN 55802 TEL: (218) 724-8578 / FAX: (218) 724-8717 Structural Engineers:

M/E/P/FP Engineers:

MBJ CONSULTING ENG. 501 Lake Avenue South, Suite 300, Duluth MN 55802 TEL: (218) 722-1056 / FAX: (218) 722-9306

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REVISIONS DESCRIPTION ADDENDUM 1 CONFORMANCE SET

DATE

6.11.10

7.12.10

06/14/10

ADDENDUM #2 DATE ISSUED: 07-12-10 REVIEWED BY: RDJ

DRAWN BY: SA DESIGNED BY: SA

AEP PROJECT NUMBER 213-1882-091

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SHEET TITLE **ENLARGED**

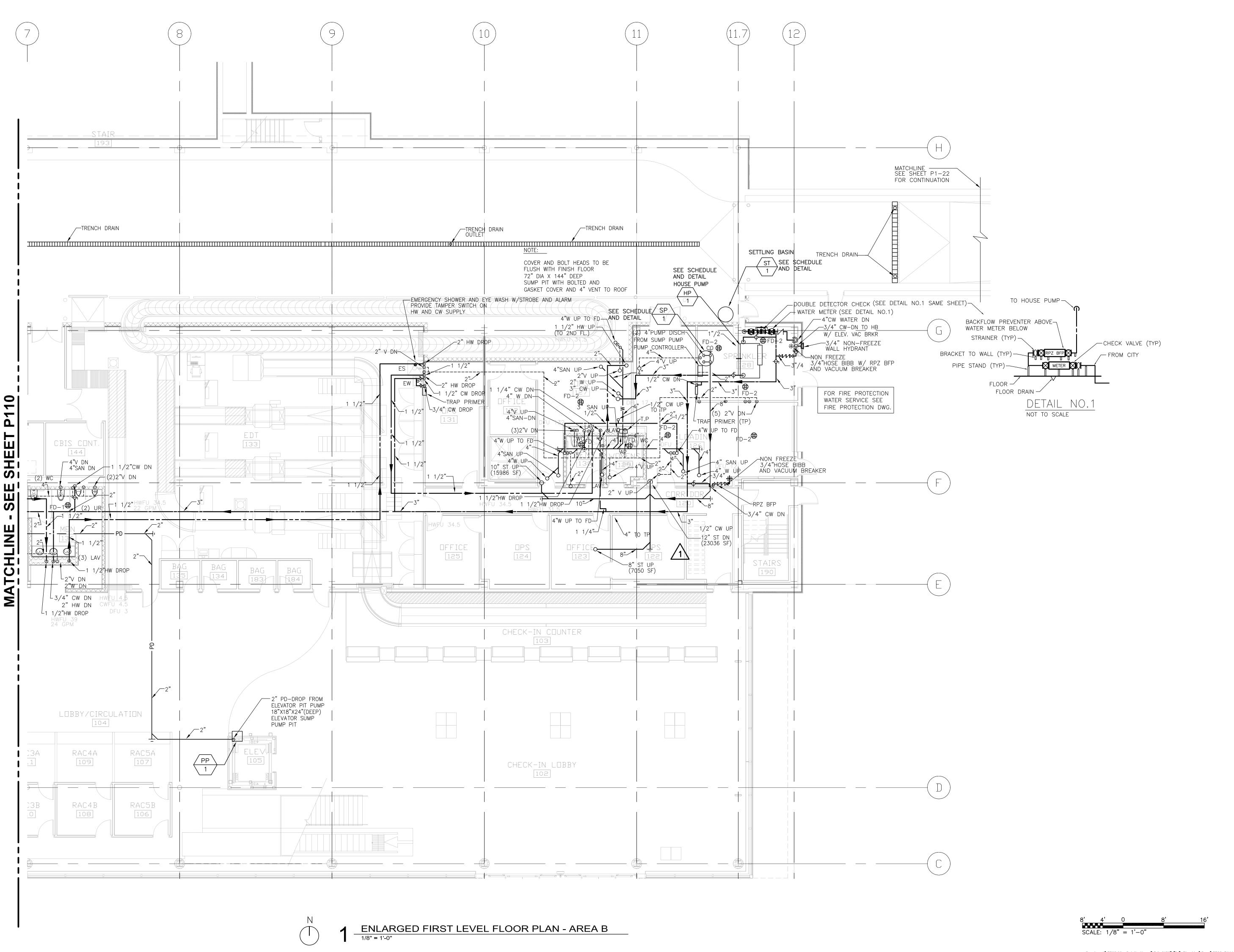
FIRST FLOOR **PLUMBING** PLAN AREA A

SHEET NUMBER

P110

BID PACKAGE 1

CONFORMANCE





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NEW PASSENGER TERMINAL

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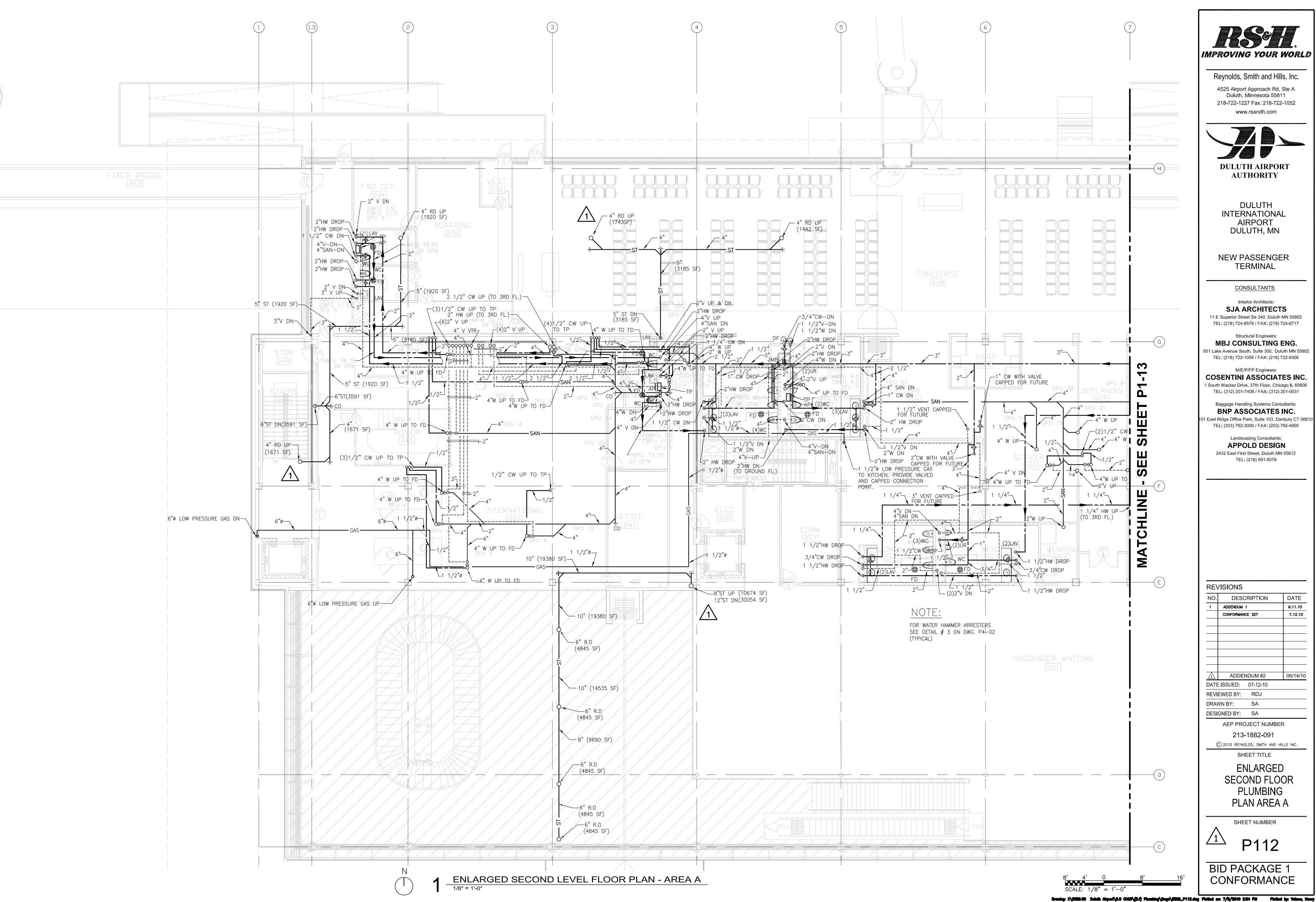
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NO.	DESCRIPTION	DATE
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	CONFORMANCE SET	7.12.10
1	ADDENDUM #2	06/14/10
DATE	ISSUED: 07-12-10	
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DESI	GNED BY: SA	
	AEP PROJECT NUMBE	:R

ENLARGED FIRST FLOOR PLUMBING PLAN AREA B

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DULUTH INTERNATIONAL AIRPORT DULUTH, MN

NEW PASSENGER TERMINAL

<u>CONSULTANTS</u>

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Baggage Handling Systems Consultants:

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NO.	DESCRIPTION	DATE
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	CONFORMANCE SET	7.12.1
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ADDENDUM #2 06/14/10 DATE ISSUED: 07-12-10

REVIEWED BY: RDJ DRAWN BY: SA DESIGNED BY: SA

AEP PROJECT NUMBER

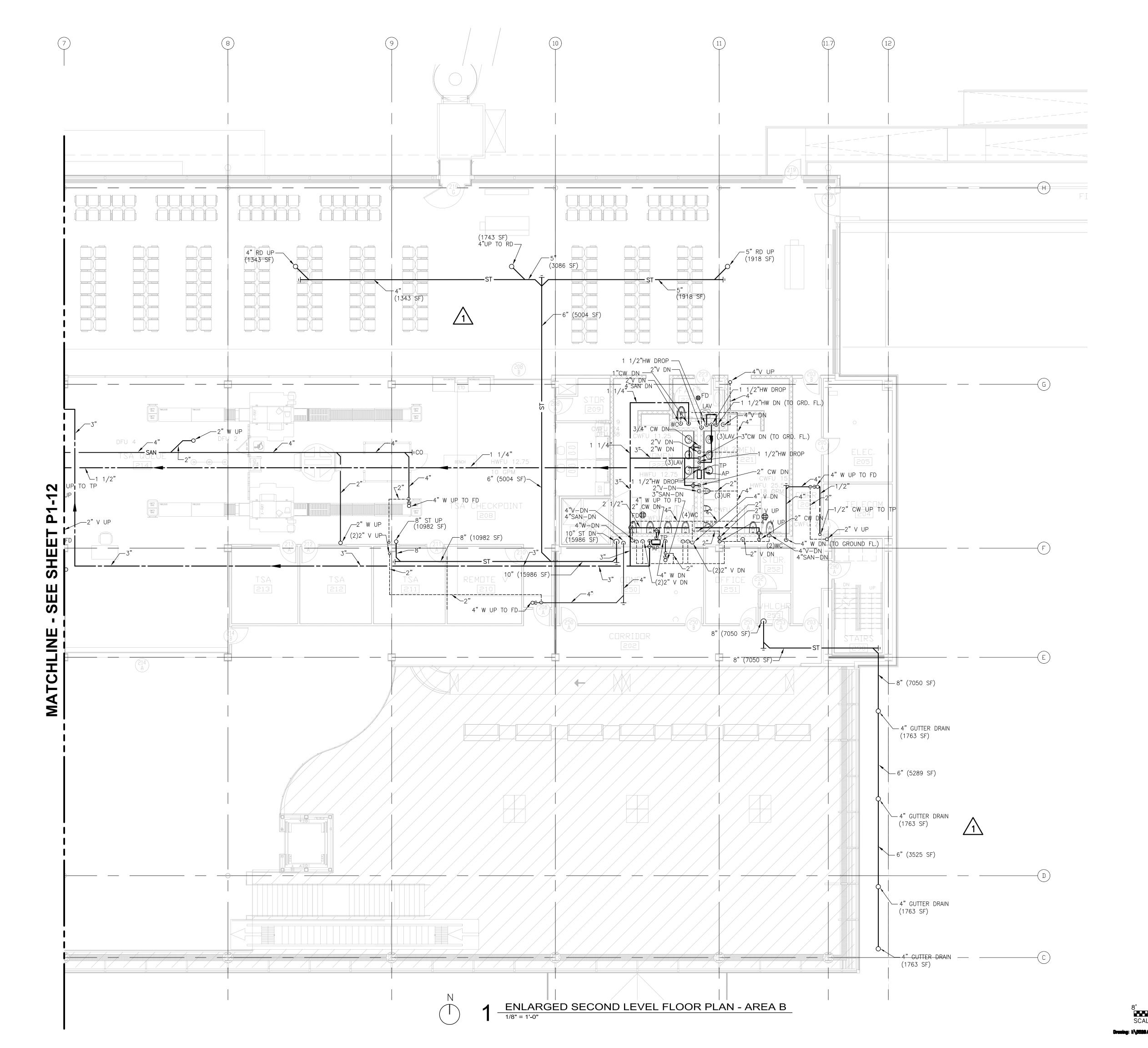
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> **ENLARGED** SECOND FLOOR **PLUMBING** PLAN AREA A

SHEET NUMBER

P112





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DULUTH INTERNATIONAL AIRPORT DULUTH, MN

NEW PASSENGER TERMINAL

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Baggage Handling Systems Consultants:

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TEL: (218) 591-5079

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 DESCRIPTION
 DATE

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 ADDENDUM 1
 6.11.10

 CONFORMANCE SET
 7.12.10

ADDENDUM #2

DATE ISSUED: 07-12-10

DRAWN BY: SA

DESIGNED BY: SA

AEP PROJECT NUMBER

REVIEWED BY: RDJ

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SHEET TITLE

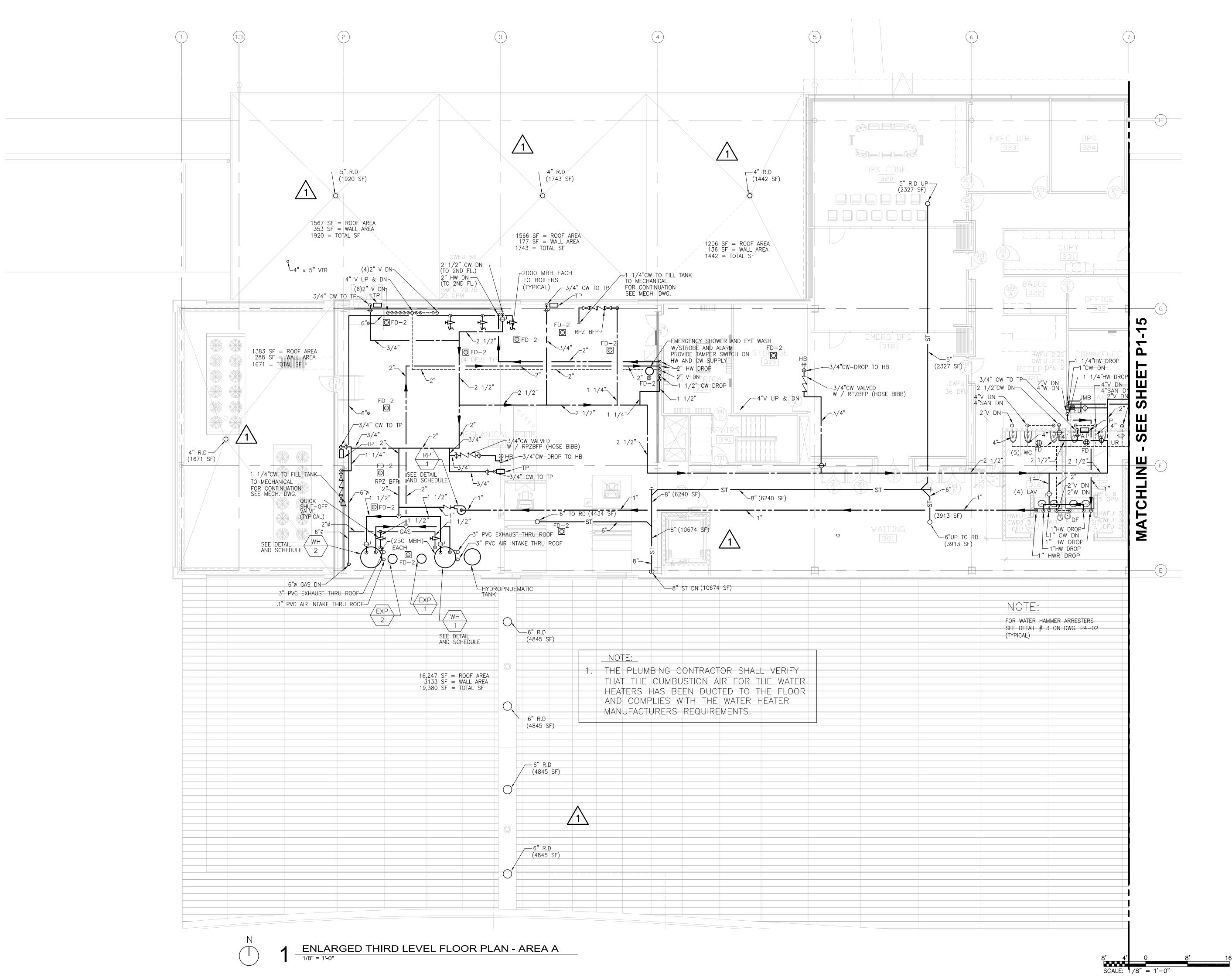
ENLARGED SECOND FLOOR PLUMBING PLAN AREA B

P11

SHEET NUMBER

BID PACKAGE 1 CONFORMANCE

= 1'-0"





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DULUTH INTERNATIONAL AIRPORT DULUTH, MN

NEW PASSENGER TERMINAL

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TEL: (218) 591-5079

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 DESCRIPTION
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 1
 ADDENDUM 1
 6.11.10

 CONFORMANCE SET
 7.12.10

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 ADDENDUM #2
 06/14/10

 DATE ISSUED:
 07-12-10

 REVIEWED BY:
 RDJ

 DRAWN BY:
 HV/SA

 DESIGNED BY:
 SA

ENLARGED
THIRD FLOOR
PLUMBING
PLAN AREA A

AEP PROJECT NUMBER

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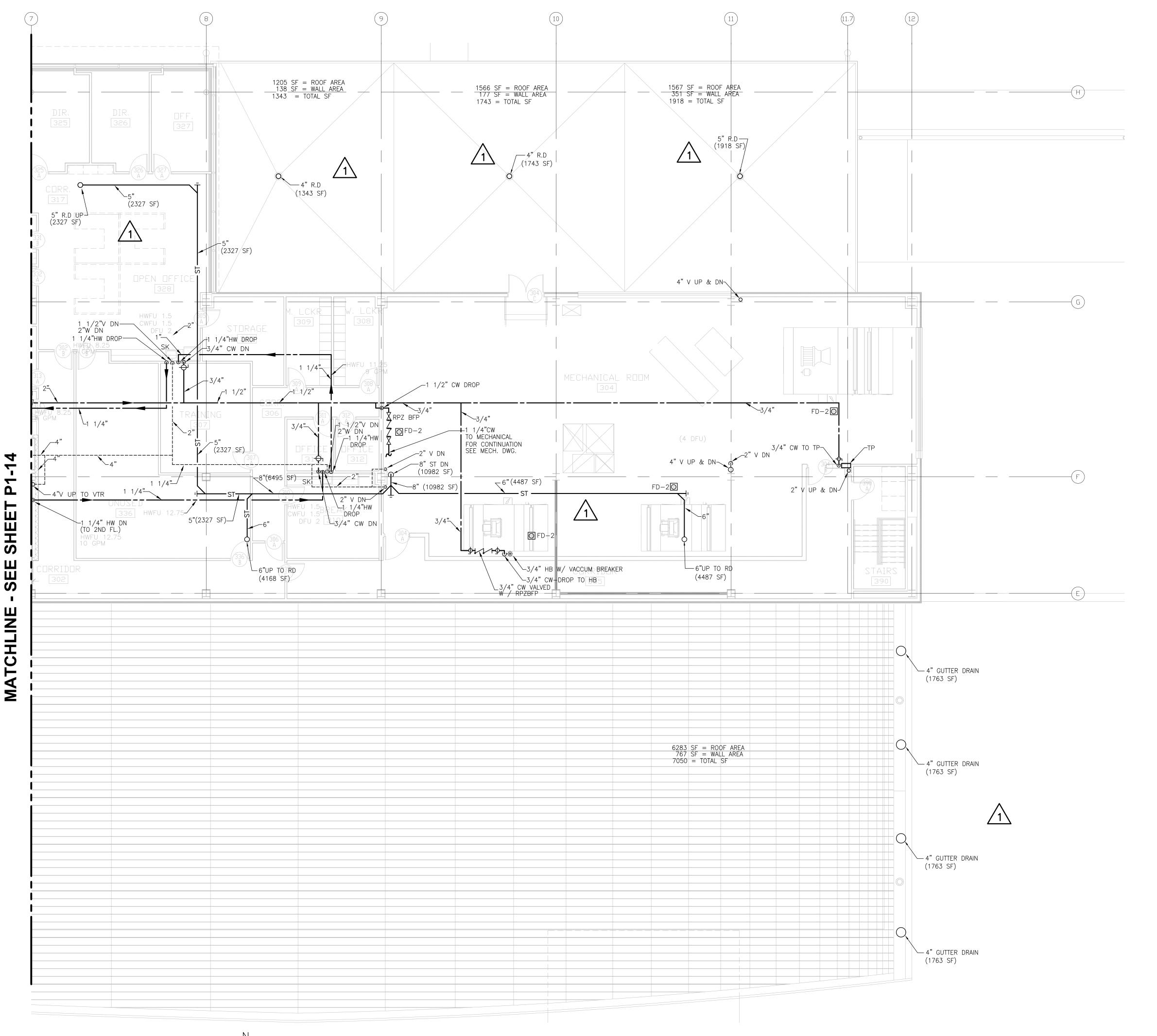
PLAN AREA A

SHEET NUMBER



BID PACKAGE 1 CONFORMANCE

P114





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NEW PASSENGER TERMINAL

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2432 East First Street, Duluth MN 55812

 NO.
 DESCRIPTION
 DATE

 1
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 6.11.10

 CONFORMANCE SET
 7.12.10

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 ADDENDUM #2
 06/14/10

 DATE ISSUED:
 07-12-10

 REVIEWED BY:
 RDJ

DRAWN BY: HV/SA

DESIGNED BY: SA

AEP PROJECT NUMBER 213-1882-091

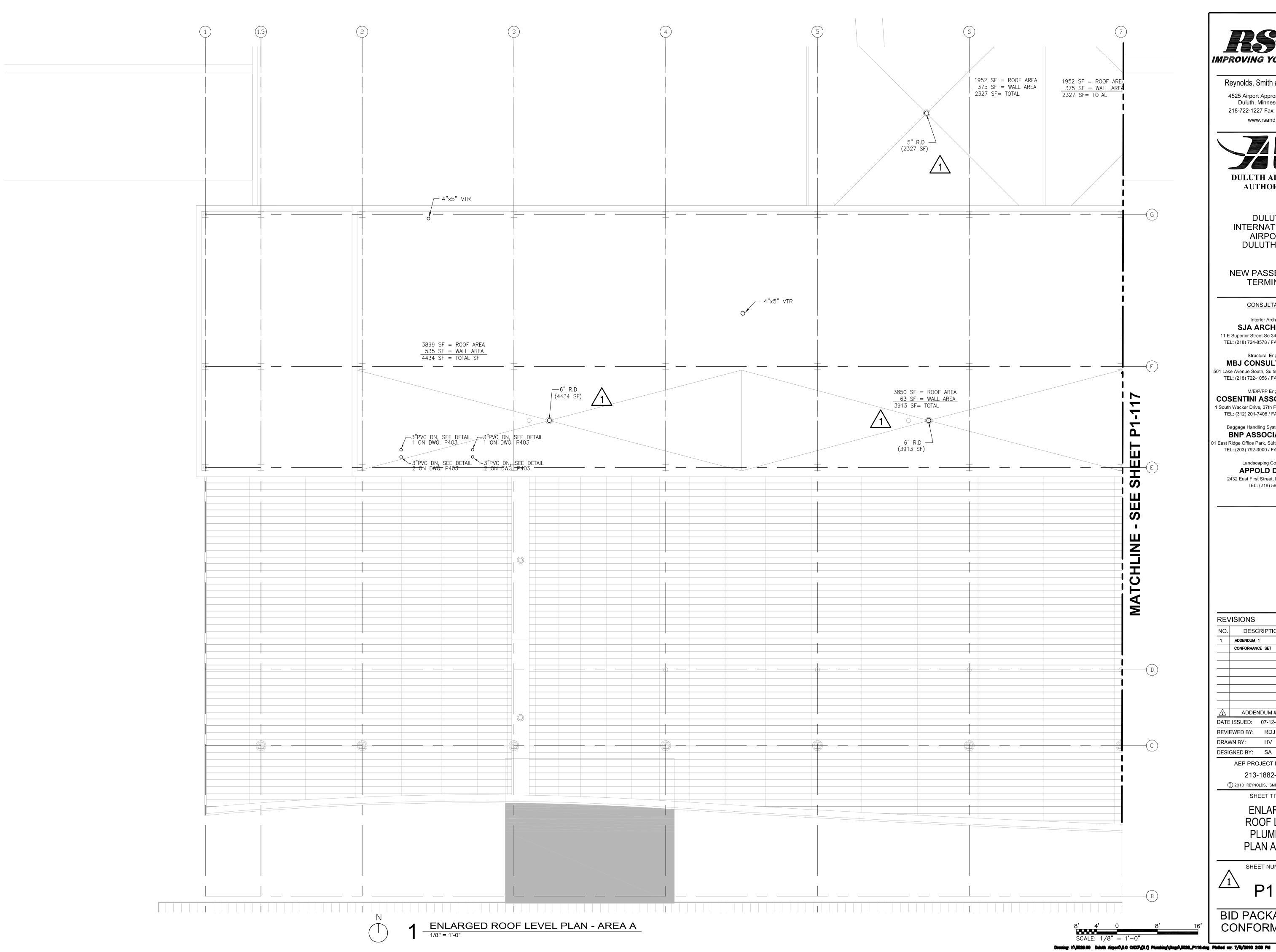
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SHEET TITLE

ENLARGED THIRD FLOOR PLUMBING PLAN AREA B

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1 P11



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AUTHORITY

DULUTH INTERNATIONAL AIRPORT

DULUTH, MN

NEW PASSENGER TERMINAL

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NO. DESCRIPTION DATE 1 ADDENDUM 1 6.11.10 7.12.10 CONFORMANCE SET

ADDENDUM #2

DATE ISSUED: 07-12-10 REVIEWED BY: RDJ

DESIGNED BY: SA AEP PROJECT NUMBER

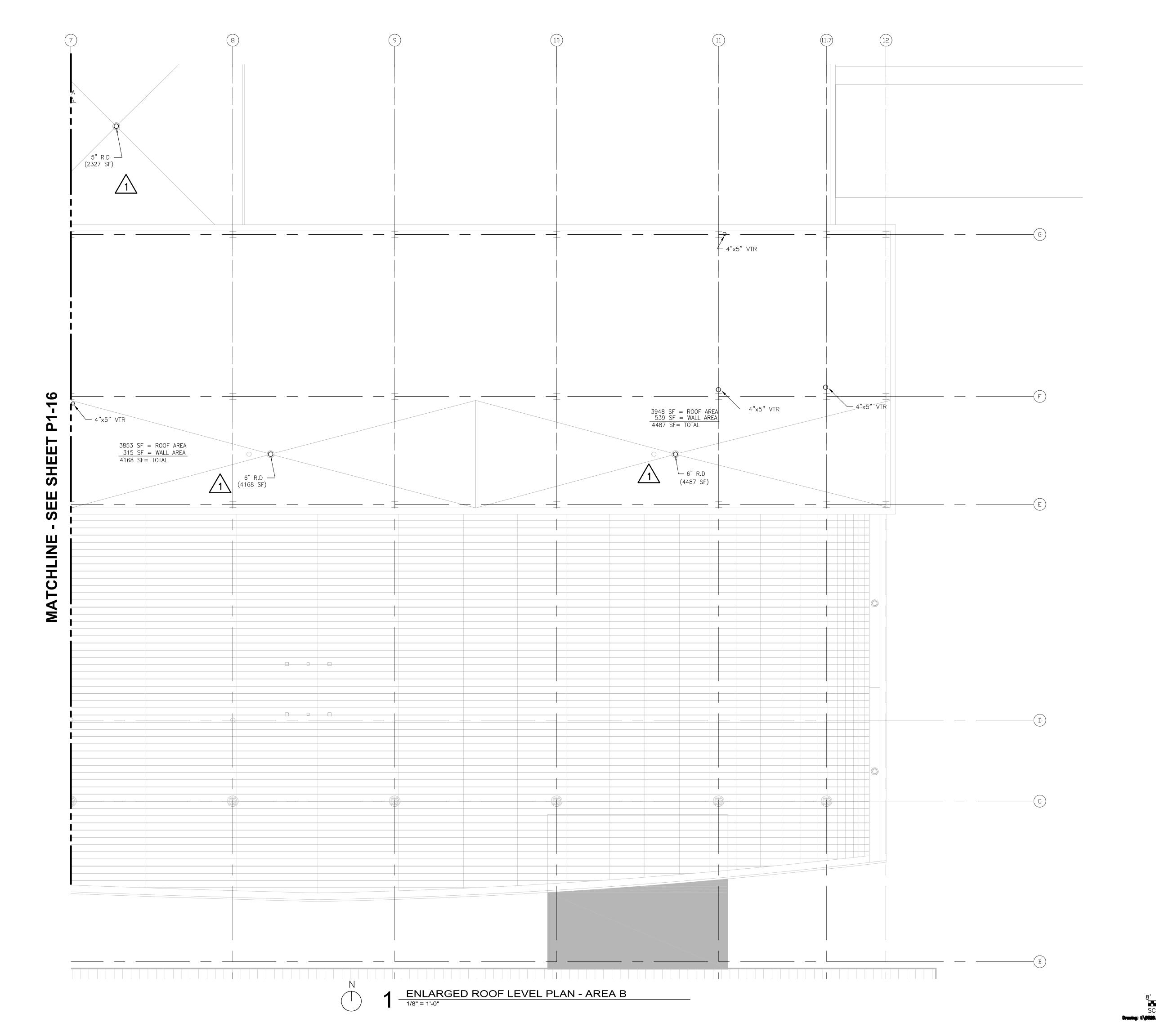
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SHEET TITLE **ENLARGED**

ROOF LEVEL PLUMBING PLAN AREA A

SHEET NUMBER





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DULUTH INTERNATIONAL AIRPORT DULUTH, MN

NEW PASSENGER TERMINAL

CONSULTANTS

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TEL: (218) 591-5079

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 DESCRIPTION
 DATE

 1
 ADDENDUM 1
 6.11.10

 CONFORMANCE SET
 7.12.10

ADDENDUM #2

DATE ISSUED: 07-12-10

REVIEWED BY: RDJ
DRAWN BY: HV

DESIGNED BY: SA

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213-1882-091
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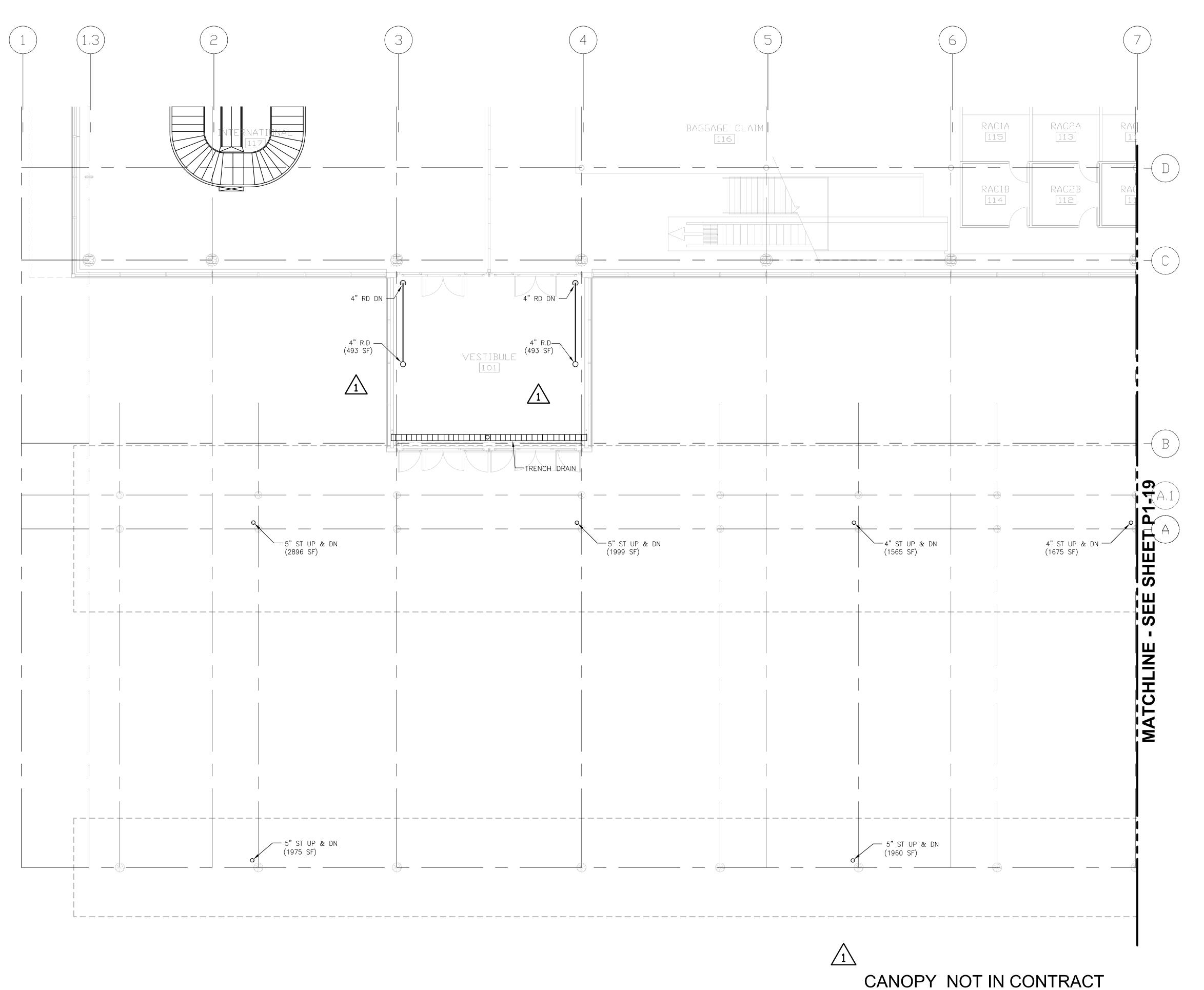
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ENLARGED ROOF LEVEL PLUMBING PLAN AREA B

SHEET NUMBER



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CONSULTANTS

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NO.	DESC	CRIPTION	DATE
1	ADDENDUM	1	6.11.1
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1	ADDE	NDUM #2	06/14/
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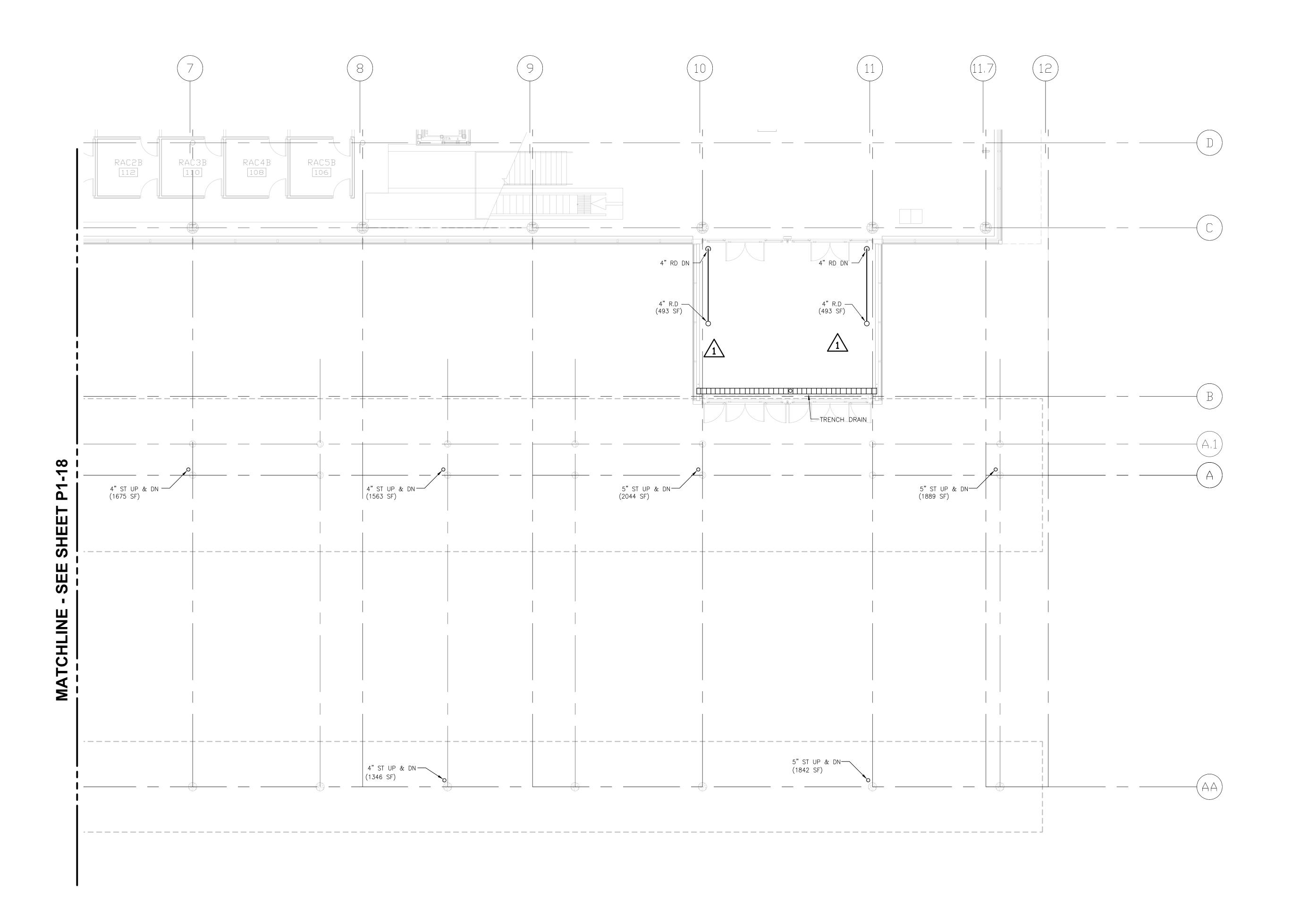
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ENLARGED FIRST FLOOR PLUMBING PLAN PLAN AREA A CANOPY SHEET NUMBER



CANOPY NOT IN CONTRACT



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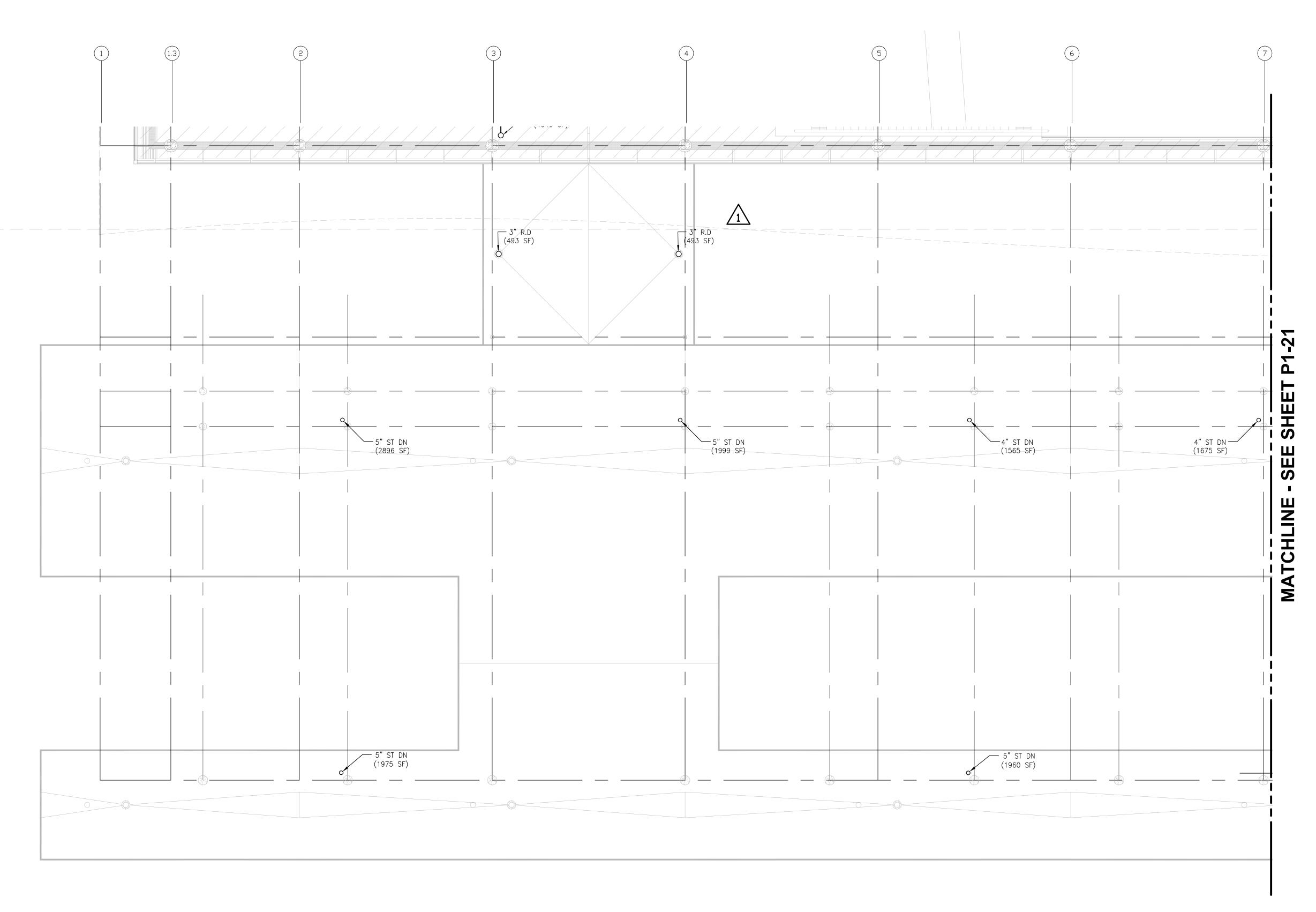
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ENLARGED FIRST FLOOR PLUMBING PLAN PLAN AREA B CANOPY

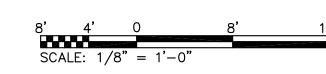
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ENLARGED SECOND LEVEL FLOOR PLAN - AREA A

1/8" = 1'-0"





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1	ADDENDUM 1	6.11.1
	CONFORMANCE SET	7.12.
\bigwedge	ADDENDUM #2	06/14

DATE ISSUED: 07-12-10

REVIEWED BY: RDJ

DRAWN BY: HV
DESIGNED BY: SA

AEP PROJECT NUMBER

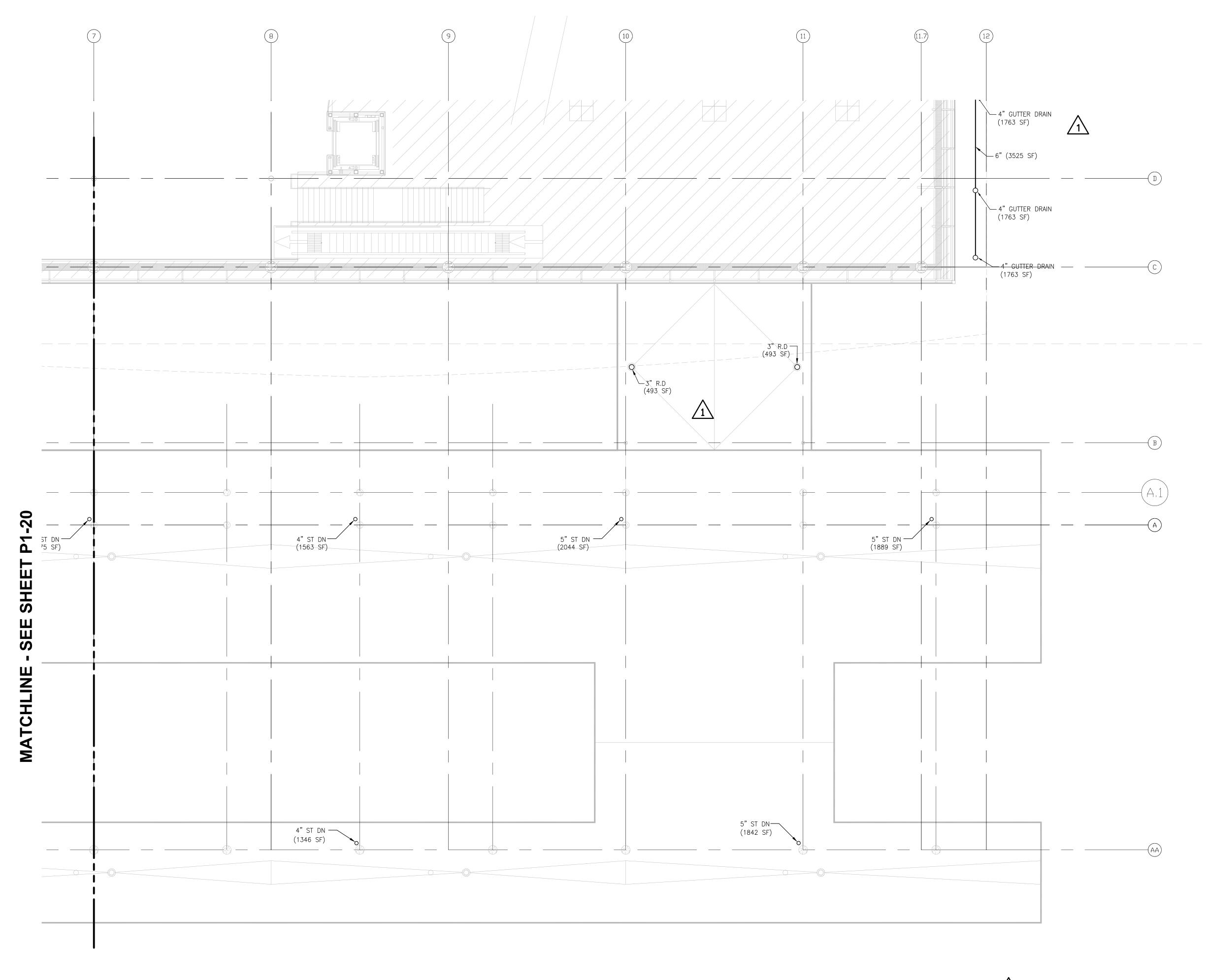
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ENLARGED
SECOND FLOOR
PLUMBING PLAN
AREA A CANOPY ROOF

SHEET NUMBER

<u>^1</u> P12



1 ENLARGED SECOND LEVEL FLOOR PLAN - AREA B

CANOPY NOT IN CONTRACT



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DULUTH INTERNATIONAL AIRPORT DULUTH, MN

NEW PASSENGER TERMINAL

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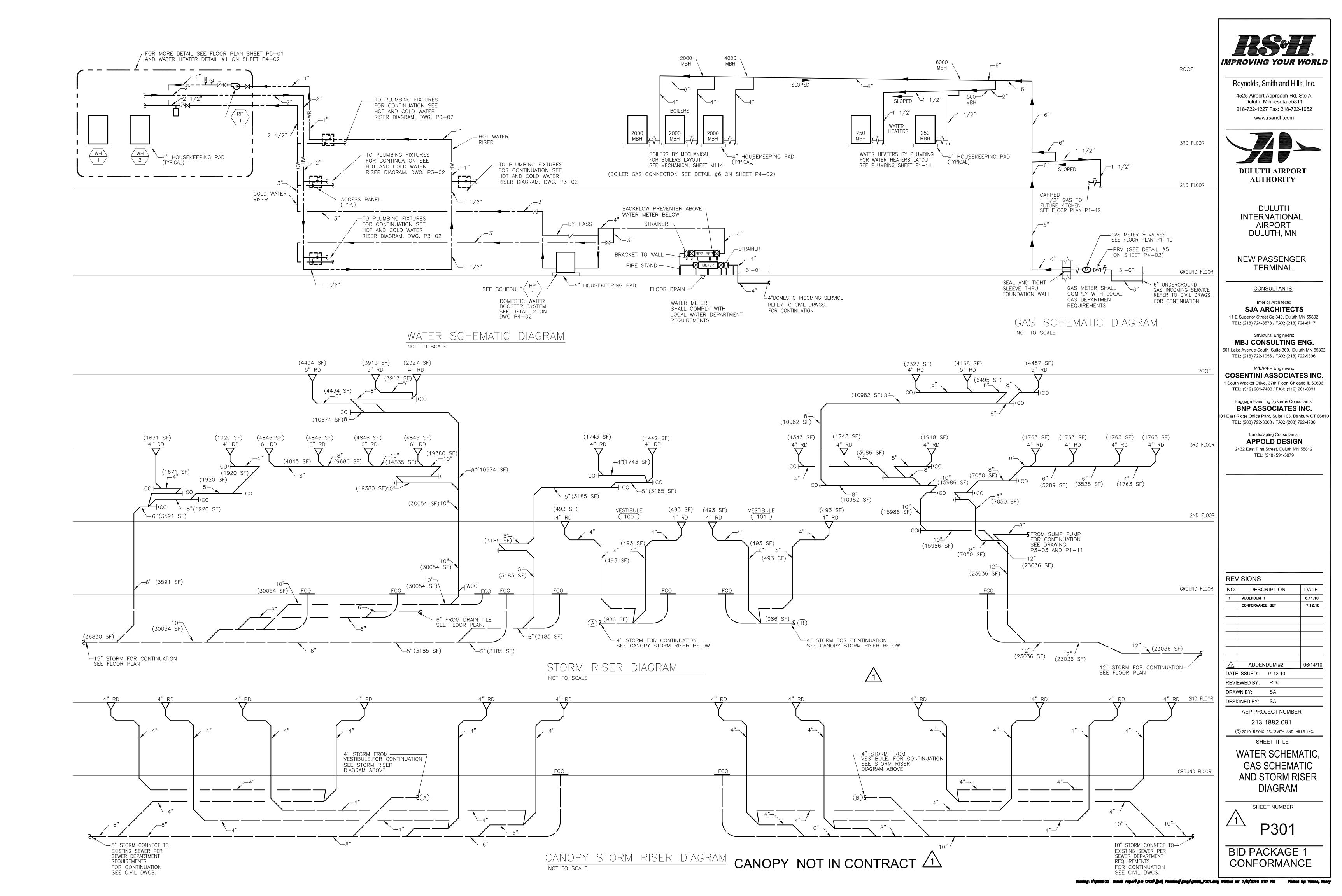
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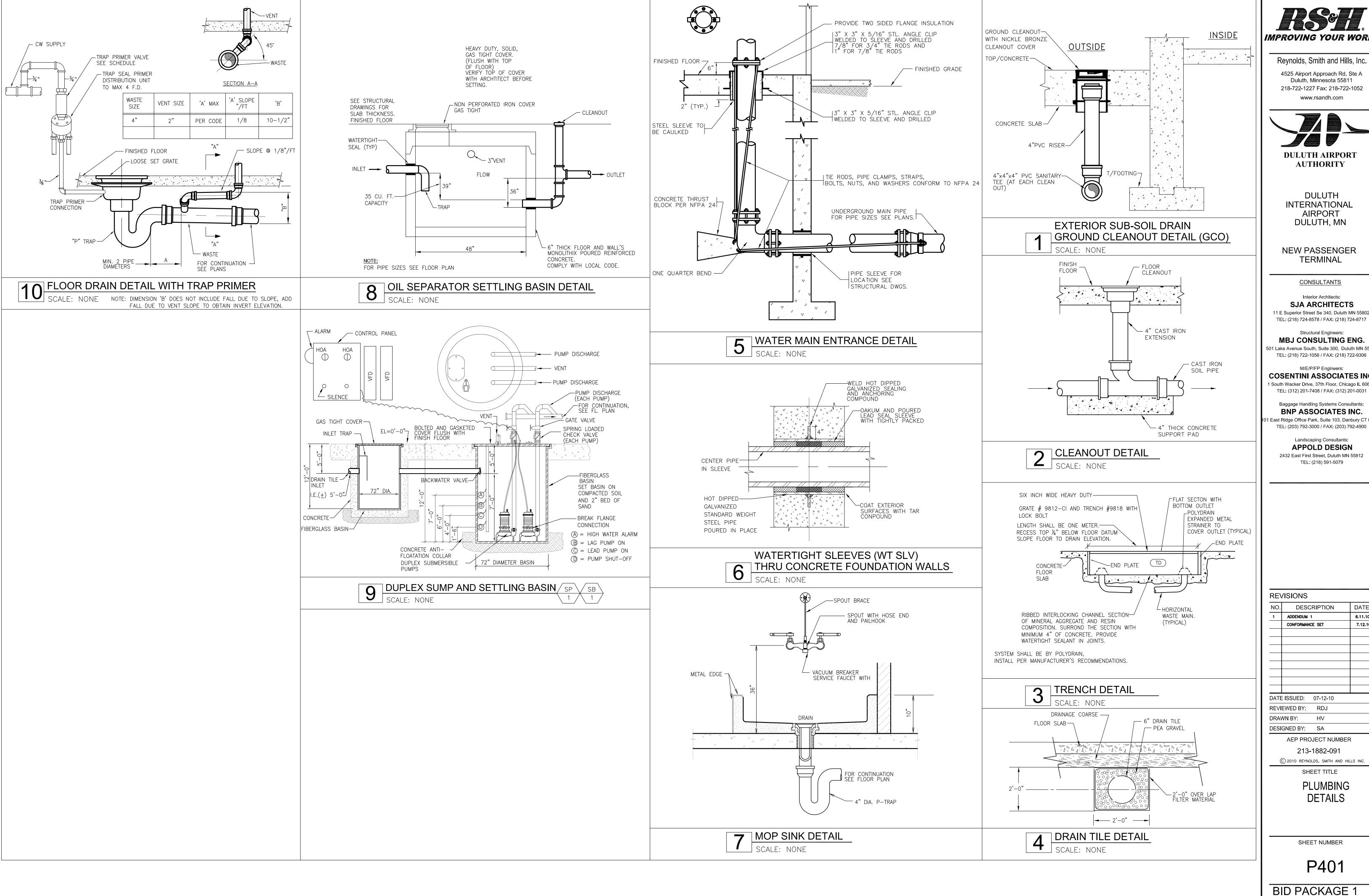
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ENLARGED SECOND FLOOR PLUMBING PLAN AREA B CANOPY ROOF

1 SHE

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NEW PASSENGER

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Baggage Handling Systems Consultants: BNP ASSOCIATES INC. 01 East Ridge Office Park, Suite 103, Danbury CT 0681

> Landscaping Consultants: APPOLD DESIGN

2432 East First Street, Duluth MN 55812 TEL: (218) 591-5079

REVISIONS DESCRIPTION ADDENDUM 1 CONFORMANCE SET

DATE ISSUED: 07-12-10 REVIEWED BY: RDJ

DRAWN BY: HV DESIGNED BY: SA

AEP PROJECT NUMBER 213-1882-091

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> **PLUMBING DETAILS**

DATE

6.11.10

7.12.10

SHEET NUMBER

P401

BID PACKAGE 1 CONFORMANCE

Druning: E\5528.00 Duluth Airport\5.0 C100\(5.1) Plumbing\Duge\5528_P401.dug Plotted on: 7/8/2010 3:05 PM Plotted by: Valenc, Henry

VALV	'E SCHE	DULE	/ 32° F TO 1	150° F SERVICE TEMPERATURE									
BALL VALVES - 4 INC	CH AND SMALLER FI	ULL PORT 600#	ł WOG	BUTTERFLY VALVES - 4 INCH AND LARGER 175 PSI MAX.									
MANUFACTURER	THREADED	SOLDER		MANUFACTURER	WAFER	LUG							
CONBRACO (APOLLO)	70-100	70-200		KEYSTONE	AR-1	AR-2							
CRANE	9302	9322		BRAY	30-119	31-119							
GRINNELL	3700	3700 SJ		CENTERLINE	200-W	200-L							
NIBCO	T-585-70	S-585-70		FOR COPPER GRV'D. CONNECTIONS	, USE VICTAULIC S	SERIES 608 300 P	SI MAX.						
RED-WHITE	5044 F.	5094 F.		SWING CHECK VALVES - 2	INCH AND SMA	ALLER							
STOCKHAM	S216-BR-RT	S216-BR-RS		1	CLASS 125	CLASS 125	CLASS 150	CLASS 150					
WATTS	B-6000	B-6001		MANUFACTURER	THREADED	SOLDER	THREADED	SOLDER					
"X" MEANS NOT AVAILABLE			- '	CRANE	37	1342	137	×					
				GRINNELL	3300	3300SJ	3320	×					
				HAMMOND	IB940	IB941	IB946	IB945					
				MILWAUKEE	509	1509	510	1510					
				NIBCO	T-413	S-413	T-433	S-433					
				STOCKHAM	B-319	B-309	B-321	×					
				FOR GROOVED CONNECTIONS, USE	VICTAULIC SERIES	712		-					
				SWING CHECK VALVES - 2	1/2 INCH AND) LARGER - FL	_ANGED						
				MANUFACTURER	CLASS 125	CLASS 250							
				CRANE	373								
				GRINNELL	X								
				HAMMOND	IR1124								
				MILWAUKEE	F-2974	<u>'</u>							
				NIBCO	F-918-B	<u> </u>							
				STOCKHAM	G-931								
				FOR GROOVED CONNECTIONS, USE	VICTAULIC SERIES	712	1	-1					

PLUMBING MA SPECIFICATIO	ATERIAL N	_S		EP 1C	Str. Str. Str. Str. Str. Str. Str. Str.	inches Sent Sent	Mr. Mr.	Mr. Solitale	S SON SON SON SON SON SON SON SON SON SO	LE L	\"C\\	Se State Co	San	RAMACE		
		14		1	1/5			/%	, \ ⁶ 6	, \ ⁸ 0,	/ \psi	/ ぐ) / \>\	/		
TYPE of MATERIAL	SIZE) i	Sett 1	Sett.	Sett.	Sett.	SOLITA	SRIED &	JRIED BY	ALC BY	RIED B	So. So.	\$ 5			
CAST IRON SOIL PIPE & FITTINGS ASTM A74	2"-15" dia.															
CAULKED JOINTS w\ LEAD & OAKUM FS QQ-C-40	2 10 did:	*	*	*					*	*						
PUSH-ON JOINTS w\ ASTM C564 GASKETS	1								*	*						
GALV. STL. PIPE ASTM A53 & DRAINAGE FITTINGS	1															
CUT-GROOVED COUPLINGS & FTTGS.	2"-24" dia.			*											i	
THREADED CAST IRON ASTM B16.12	1 1/2"-2 1/2" dia.	*	*													
COPPER PIPE HARD DRAWN TYPE M ASTM B88 w\	1															
CAST ASTM B16.23 or WROT ASTM B16.29															1	
COPPER SOLDER JOINT DRAINAGE FITTINGS	1 1/2"-2 1/2" dia.	*	*				İ						İ		, ,	
COPPER PIPE HARD DRAWN TYPE K ASTM B88	1 1/2"-2 1/2" dia.						*									
VITRIFIED CLAY PIPE & FITTINGS ASTM C700 w\																
COMPRESSION GASKET JOINTS ASTM C425	6"-24" dia.															
REINFORCED CONCRETE PIPE ASTM C76 w\																
RUBBER GASKET JOINTS ASTM C443	14"—54" dia.										*					
DUCTILE IRON PIPE & FITTINGS AWWA C151																
CEMENT LINED AWWA A21.4, w\ PUSH-ON or																
MECHANICAL JOINTS AWWA A21.11	3"-24" dia.						*	*								
GALV. STL. PIPE ASTM A53 Sch.40 w\ GALV. 125#															1	
THREADED MALLEABLE IRON FITTINGS ANSI B16.3	to 2 1/2" dia.				*											
FLANGED CAST IRON FITTINGS ANSI B16.1	3"—12" dia.				*											
COPPER PIPE HARD DRAWN TYPE L ASTM B88 w\																
CAST ASTM B16.18 or WROT ASTM B16.22																
COPPER SOLDER JOINT PRESSURE FITTINGS	to 2 1/2" dia.				*											
ROLL-GROOVED COPPER FITTINGS & COPPER																
PLATED DUCTILE IRON COUPLINGS	3"-6" dia.				*											
T-DRILL EXTRUDED CONNECTIONS	1 1/2"-6" dia.				*											
GALV. STL. PIPE ASTM A53 Sch.40 w\ GALV. 250#																
THREADED MALLEABLE IRON FITTINGS ANSI B16.3	to 2 1/2" dia.					*										
FLANGED CAST IRON FITTINGS ANSI B16.1	3"-12" dia.					*										
PREFORATED SCHEDULE 40 PVC	4"—8" dia.											*				
POLYVINYL CHLORIDE (PVC) PLASTIC PIPE (TYPE DWV PIPE).		*	*	*						*	*					
ASTM F 891	6"—12" dia.															
POLYVINYL CHLORIDE (PVC) PLASTIC FITTINGS		*	*	*						*	*					
ASTM D 2464															7	
													l		,	

"X" MEANS NOT AVAILABLE

	FIXTURE ROUGH-IN PIPE SIZES													
FIXTURE	TAG	AIR CH	R AND HAMBER TIXTURE	NIP	URE PLE INLET)		DE EMENTS	MOUNTING HEIGHT (FLR. TO	ELEC.	MFG.	MODEL	REMARKS		
		HW	CW	HW	CW	WASTE	VENT	RIM)						
WATER CLOSET	WC-1	ı	1 1/4"	-	1"	4"	2"	15"	120V	SEE SPEC.				
WATER CLOSET (ADA)	WC-2	-	1 1/4"	_	1"	4"	2"	17"	120V	SEE SPEC.				
WATER CLOSET/LAV	W/L	3/4"	1 1/4"	1/2"	1/2"	4"	2"	_	_	WILLOUGHBY	ECF-3696	ADA COMPLIANT — LAV /TOILET , FULL MODEL NUMBER ECF—3696 (L OR R) ON-BPH-PM2-PBH-OV-TW4-LF-RTH FLUSH CONTROL CUTOFF SWITCH LOCATE OUTSIDE ROOM.		
LAVATORY	LAV-1	3/4"	3/4"	1/2"	1/2"	2"	1 1/2"	SEE ARCH.	_	SEE SPEC.				
URINAL	UR-1	ı	1"	_	3/4"	2"	1 1/2"	24"	120V	SEE SPEC.				
URINAL (ADA)	UR-2	-	1"	_	3/4"	2"	1 1/2"	17"	120V	SEE SPEC.				
SINK	SK-1	3/4"	3/4"	1/2"	1/2"	2"	1 1/2"	-	_	SEE SPEC.				
SINK	SK-2	3/4"	3/4"	1/2"	1/2"	2"	1 1/2"	-	_	SEE SPEC.				
DRINKING FOUNTAIN	DF-1	_	3/4"	_	1/2"	2"	1 1/2"	-	_	SEE SPEC.				
JANITOR'S MOP BASIN	JMB	3/4"	3/4"	1/2"	1/2"	3"	2"	_	_	SEE SPEC.				
HOSE BIBB	НВ	_	1"	_	3/4"	_	_	_	_	-	-	WITH CODE REQ'D. BACKFLOW PREVENTER		
TRAP PRIMER	TP	_	1/2"	_	_	_	_	_	_	PRECISION PLUMBING PRODUCTS	MODEL P1 or P2	RUN 1/2" COLD WATER TO EACH FLOOR DRAINS INCLUDE DISTRIBUTION UNITS AS REQUIRED.		
								_						
EMER. SHOWER / EYEWASH (ADA)	ES/EW	2"	1 1/2"	1 1/4"	1 1/4"	2"	2"	_	_					
SHOWER	SH	3/4"	3/4"	1/2"	1/2"	2"	1 1/2"	_	_	SEE SPEC.				

	DOMESTIC WATER HEATER SCHEDULE														
HEATER		LOCATION	STORAGE CAPACITY	ELECTRICAL						GAS RA	RECOVERY RATE AT	STORED WATER	BASIS OF		
TAG	SERVICE			PUMP	ELEMENT KW	BURNER	BLOWER	VOLTS	PHASE		100 DEG. F TEMP. RISE		DESIGN	MODEL NO.	COMMONS
WH-1	DOMESTIC WATER	3RD FLOOR	100	_						250,000	294	140 14	40	LUHE-100T-250E-3N(A)	99.1% EFFICIENT
WH-2	HEATING	MECHANICAL ROOM	100	_						250,000	294	140	LAARS	LUHE-100T-250E-3N(A)	33.176 ELTTOLENT

				F		MF	- S	C	HE	EDULE			
	SERVICE	LOCATION	SYSTEM GPM	TOTAL DYNAMIC HEAD	PUMP GPM		MOTOR DATA HP VOLTS PH RPM			MANUFACTURER & MODEL	REMARKS		
	P-1 HOUSE PUMP	GROUND FLOOR		92	73	5	460		3450	SYNCROFLO	TRIPLEX BOOSTER SYSTEM U.L./C-U.L. SYSTEM FLOW 145 GPI		
HP-1				92	73	5	460	3	3450	55TA354V-VFD	BOOST PRESSURE 40 PSIG INCLUDING A SUCTION PRESSURE OF 38 PSIG MIN.		
				92	37	3	460	3	3450				
RP-1	120° HOT WATER RECIRCULATING PUMP	THIRD FLOOR	6	31		1/6	115		3300	B&G PL-36	IN-LINE		
PP-1,2&3	ELEVATOR PIT PUMP	GROUND FLOOR	10	15	-	1/4	120	1		ZOELLER PUMP CO, STANCOR	SUBMERSIBLE, SUMP PUMP LOCATED IN 18"X18"X24" W/ OIL MINDER ON EMERGENCY POWER		
SP-1	DUPLEX SUBMERSIBLE SUMP PUMP	GROUND FLOOR	800	30	800	10	460	3	1750	FTI FTI150DLF67.54	DUPLEX SUBMERSIBLE SUMP PUMP DUPLEX VARIABLE—SPEED CONTROL SYSTEM TO RESPOND TO THE FLOW CHANGES, PROVIDE SUBMERSIBLE TRANSMITTER, EMERGENCY POWER		

(OTHER ACCEPTABLE MANUFACTURES ARE BELL AND GOSSETT, METROPOLITAN AND CANARIIS)

MIXING VALVE SCHEDULE									
TAG	LOCATION	SERVICE	IN HOT	IN COLD	MIXED OUT	GPM MIN.	GPM MAX	COMMENTS	BASIS OF DESIGN
TMV	SINK	LAV	120	40	110	0.1	0.5	PARRALEL PIPED	SYMMONS 5-110-CK

GREASE INTERCEPTOR SCHEDULE										
TAG NO.	SERVICE	LOCATION	MANUFACTURER & MODEL #	REMARKS						
GI 1	GREASE INTERCEPTOR	GROUND FLOOR	J.R. SMITH MODEL # 8050 50 GPM FLOW, 100 LB. GREASE CAPACITY							

DRAIN SCHEDULE								
TAG	SERVICE	DESCRIPTION	JR SMITH NO.	ACCEPTABLE MANUFACTURES				
FD-1	FINISHED AREA FLOOR DRAIN	NICKLE BRONZE VANDAL PROOF TOP	2010	WADE OR ZURN				
FD-2	MECHANICAL ROOMS	FLOOR SINK W/ 1/2" GRATE	2270	WADE OR ZURN				
FD-3		RECESSED GRATE						
RD-1	ROOF DRAIN	CAST IRON WITH FLASHING CLAMP & CAST IRON DOME	1015-ARC	WADE OR ZURN				
RD-2	ROOF DRAIN	CAST IRON WITH FLASHING CLAMP, CAST IRON DOME & INTERNAL DAM	_	WADE OR ZURN				
RD-3	ROOF DRAIN							
TD	TRENCH DRAIN		TRENCH 9818 GRATE 9812-CI	POLYDRAIN				
FS		FLOOR SINK						



Reynolds, Smith and Hills, Inc.

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DULUTH INTERNATIONAL AIRPORT DULUTH, MN

NEW PASSENGER TERMINAL

CONSULTANTS

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11 E Superior Street Se 340, Duluth MN 55802 TEL: (218) 724-8578 / FAX: (218) 724-8717

Structural Engineers: MBJ CONSULTING ENG. 501 Lake Avenue South, Suite 300, Duluth MN 55802 TEL: (218) 722-1056 / FAX: (218) 722-9306

M/E/P/FP Engineers: COSENTINI ASSOCIATES INC. 1 South Wacker Drive, 37th Floor, Chicago IL 60606 TEL: (312) 201-7408 / FAX: (312) 201-0031

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> Landscaping Consultants: APPOLD DESIGN

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REVISIONS NO. DESCRIPTION

1 ADDENDUM 1 6.11.10 CONFORMANCE SET

7.12.10

DATE ISSUED: 07-12-10 REVIEWED BY: RDJ DRAWN BY: HV

DESIGNED BY: SA AEP PROJECT NUMBER 213-1882-091

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PLUMBING

SHEET NUMBER

P501

BID PACKAGE 1 CONFORMANCE

Drawing: E\5528.00 Dubuth Airport\5.0 C/00\(5.0\) Plumbing\Dugo\5528_P501.dug Plotted on: 7/8/2010 3:00 PM Plotted by: Valenc, Henry